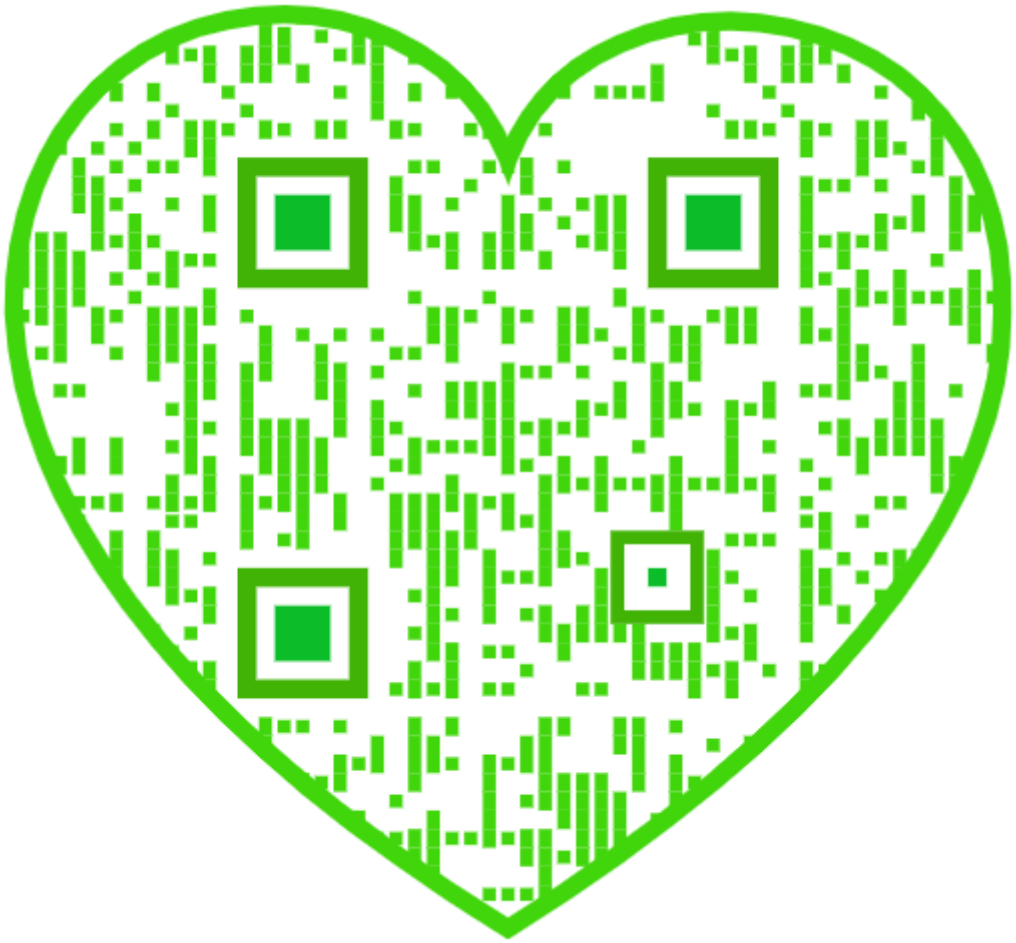
SEA-FISHING as a SPORT

by

LAMBTON J. H. YOUNG.



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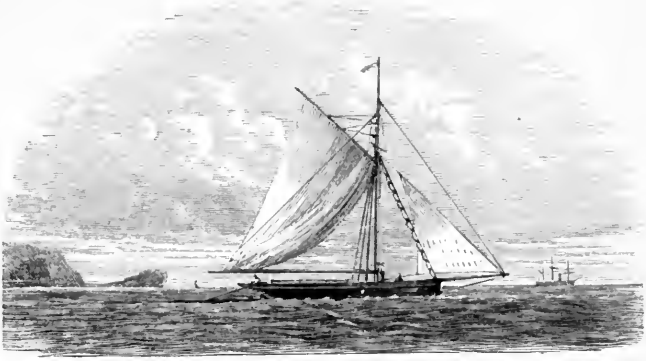
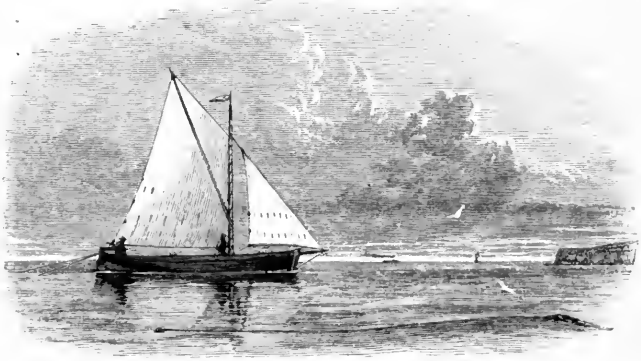


15-Ton Yacht for Trawling, &c.



Open Boat for Mackerel and Coast Fishing.

Man Shrimping, and boat used on Coast.

SEA-FISHING AS A SPORT:

BEING AN ACCOUNT OF THE

VARIOUS KINDS OF SEA FISH,

HOW, WHEN, AND WHERE TO CATCH THEM

IN THEIR

VARIOUS SEASONS AND LOCALITIES.

BY

LAMBTON J. H. YOUNG.

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5, PATERNOSTER ROW.
MDCCCLXV.

"Wherein if any man, considering the parts thereof which I have enumerated, do judge that our labour is to collect into an art or science that which it has been permitted by others as matters of common sense and experience, he judgeth well."

BACON, *De Aug. Scient.*

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PREFACE.

In the following little volume I have endeavoured to lay before the public a plain and practical work on Sea Fishing, a book which has been long wanted, there never having been one published which treated solely on this subject. In it I have given a brief account of the British fisheries, and a descriptive statement of each of the most important kinds of fish found on our coast, with a view to induce those who migrate every year from the interior of the country to the coast, to make Sea Fishing in all its branches a distinct pursuit quite as much as salmon fishing, grouse shooting, or any other of the many

sports which have become necessary to the existence of the wealthier classes, and to point out copiously to sea-side residents as well as those who own yachts of *all* sizes, that they may add very greatly to their pleasure by regularly seeking the various kinds of fish in their different localities, all fishing in salt water being *free* to every one. I have also given a description of the various kinds of tackles, baits, boats, gear, &c., required in sea fishing, and by the help of which every one may make his own tackle.

Hoping that my many shortcomings will be leniently dealt with, I commit the result of my labours during many spare hours to the consideration of all who may take an interest in the subject, wishing them as many pleasant days as I have passed in my favourite pursuit.

L. J. H. Y.

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FISH TABLE.

The following tabular account of the dates when our principal fishes are in season will most likely be found useful :—S, denotes the fish in season; F, in finest season; and O, out of season.

	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
Brill	S	S	S	S	S	O	O	O	O	S	S	S
Carp	S	S	S	S	S	S	S	S	S	S	S	S
Cockles	S	S	S	S	O	O	O	O	S	S	S	S
Cod	F	S	S	O	O	O	O	O	S	S	S	F
Crabs.....	O	O	O	S	F	F	F	F	F	O	O	O
Dabs	S	S	S	S	S	S	S	S	O	O	O	O
Dace	F	F	O	O	O	S	S	S	F	F	F	S
Eels	S	S	S	O	O	O	O	S	F	F	F	S
Flounders	S	S	S	O	O	O	O	O	O	S	S	S

FISH TABLE—*continued.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Gurnet	O	O	O	O	S	S	S	S	S	O	O	O
Haddocks	F	S	O	O	S	S	S	S	S	F	F	F
Halibut	S	F	F	S	S	F	F	S	S	S	S	S
Herrings	S	O	O	O	S	S	F	F	S	S	S	S
Ling	S	S	S	O	O	O	O	O	S	S	S	S
Lobsters	O	O	O	S	F	F	F	S	S	O	O	O
Mackerel	S	S	S	S	S	S	O	O	S	S	S	S
Mullet	O	O	O	S	S	S	S	O	O	O	O	O
Mussels	S	S	S	S	O	O	O	O	S	S	S	S
Oysters	S	S	F	F	O	O	O	O	S	S	S	S
Plaice	S	O	O	O	S	S	S	S	S	S	S	S
Prawns	O	O	S	F	F	F	F	S	O	O	O	O
Salmon	O	S	S	F	F	F	S	S	O	O	O	O
Shrimps	S	S	S	S	S	O	O	O	S	S	S	S

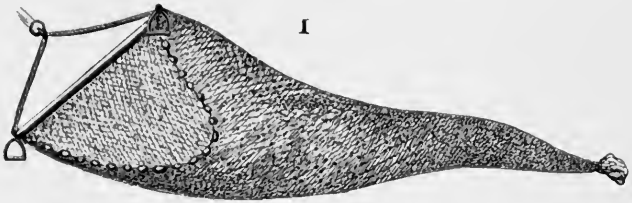
FISH TABLE—*continued.*

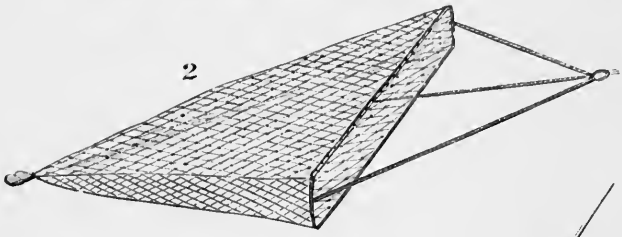
	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Skate	F	F	F	F	F	F	S	S	O	O	S	S
Smelt	S	S	S	S	S	O	O	O	O	O	S	S
Soles	S	O	O	O	S	S	S	S	S	S	S	S
Sprats	S	O	O	O	O	O	O	O	O	O	S	S
Thornback.....	O	O	O	O	O	O	S	S	S	S	S	O
Trout	O	S	F	F	F	F	S	S	S	O	O	O
Turbot	S	O	O	O	S	S	S	S	S	S	S	S
Whitings	F	F	O	O	O	S	S	S	S	F	F	F

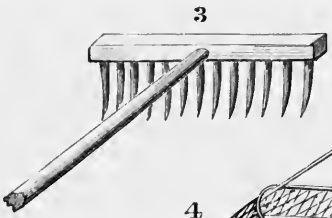
THE BOAT AND GEAR.

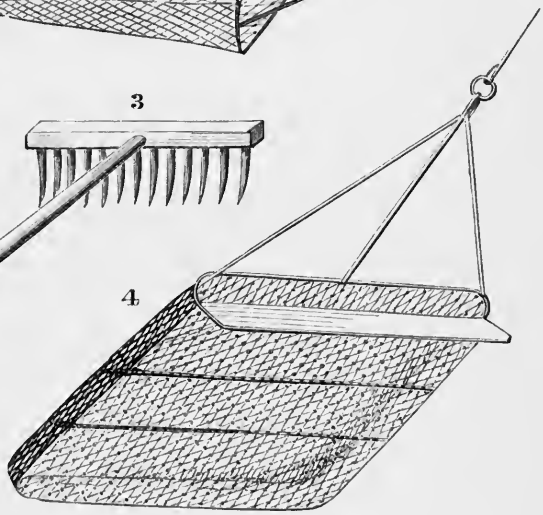
The Yacht—The Gear—Boat for Harbour Fishing—Hydroplt.

PLATE II.









No. 1. Trawl Net.
„ 2. Keer Drag.
„ 3. Launce Rake.

No. 4. Dredge.
„ 5. Gaff.
„ 6. Jigger.

SEA-FISHING AS A SPORT.

THE BOAT AND GEAR.

A SMALL yacht, of from ten to twenty-five tons, can be made very useful for fishing excursions of a few days at a time, by setting bultoes, and whilst they are down the yacht can be under weigh trawling; a couple or three gentlemen, with a man and a boy, can very well manage a yacht of this kind, and in the course of a season an immense number of all kinds of fish will be taken. Lines of every kind should be taken on board when going on an excursion of this kind, and every sort of gear as described under that head, also three or four crab pots for the capture of crabs or lobsters; and half a dozen prawn pots, for on almost all parts of the rocky coast the very finest prawns may be taken if the pots are set overnight baited with stale fish, fish garbage,

or lumps of liver. I intend to try pots for crabs and prawns made to fold up the same as the eel pots sold in most fishing-tackle shops, made of wire and net strained over it, so that, when not in use, they can be folded up—no thicker than a couple of inches—and stowed away in any corner. It is also productive of much pleasure if, in a moderate-sized yacht, which has a fifteen-foot boat, a tuck net is carried, as, when the sea is too heavy off the coast to cruise or fish, this net can be used in the estuaries and harbours of the coast, capturing almost all kinds of fish, the red mullet and flat-fish in particular. Let it be laid down as a golden rule that you never go in your boat without your gun, as often a wild duck or some curlews will be the reward of your forethought. For ordinary harbour fishing the usual floaty coast boat, of from fourteen to eighteen feet in length, moderately light to row, and when ballasted safe under sail; she should have a single mast, with a spritsail and foresail, on each of which should be reef-points (see Vignette), because very often one has to take in sail at a very short notice, from squalls suddenly springing up in the summer season; a pair of oars and a

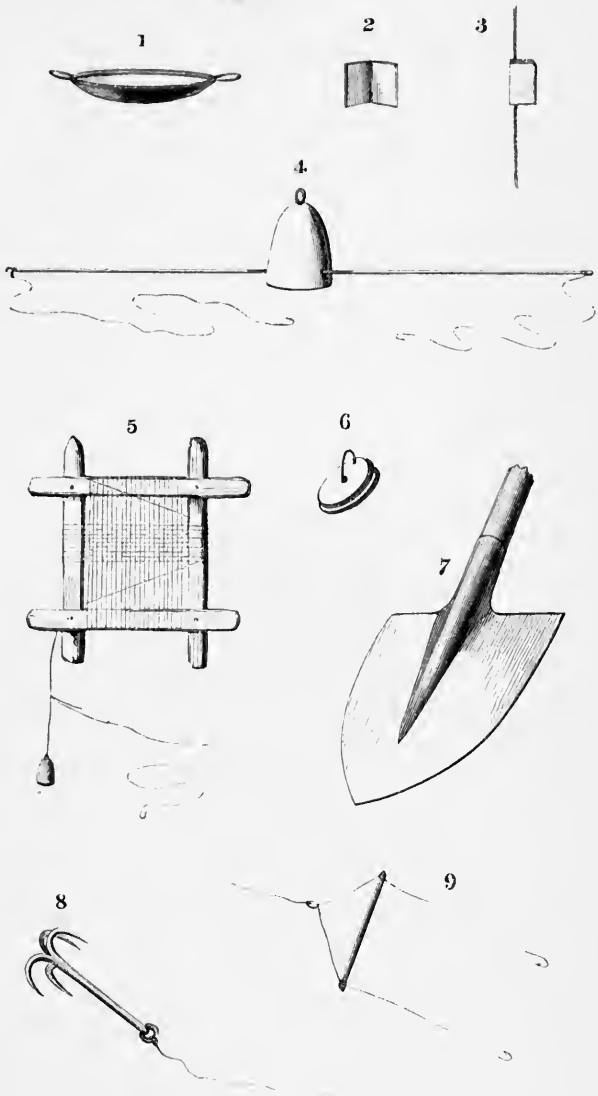
pair of sculls, made of good ash, neatly leathered round the looms, so as to take off the rub of the rowlock, and bound at the end of the wash with a strip of sheet copper; a boat-hook; some oblong canvas bags bound with rope, to contain coarse gravel for ballast; a wooden or tin dipper; and, if expense is no object, a "hydropult," to pump out the water which will always accumulate in a boat; several sets of tholes, which in sea-going boats are always movable, so as easily to be taken out when alongside a quay or a vessel. A bag should form a part of the outfit, to contain hammers, nails, gimlets, awls, twine, sail needles, palms, pieces of lead, and all sorts of odds and ends. A creeper, as it is termed (see Plate III, No. 8), is requisite, with a long rope attached to anchor by, and a killick for rocky ground (see Plate IV, No. 2). A locker should always be under the stern-sheets, and, if possible, one forward in the bows. An elm-built boat, copper fastened, will be found the cheapest and most generally useful. They can usually be purchased on the coast at from ten to fifteen shillings per foot of length; eighteen feet is the most useful length, the breadth being in proportion. To the top of the stem a bump-

kin is fitted, which extends the foresail beyond the bow like a short bowsprit, and along the gunwale, outside, are hung six or eight "*fenders*," made of circular form, of canvas stuffed with oakum; their use is to prevent the sides of the boat from chafing when alongside a quay or another vessel. The rudder and tiller are of the usual form, the tiller being almost invariably used on the coast, from the convenience of being worked with one hand, whilst the other manages the main-sheet. It is not usual to go out for more than one or two days in an *open* boat, as a decked boat is used when on a lengthened trip for fishing.

APPARATUS.

KILLICK—CREEPER — SPILLER STICK—COCKLE HOE—GAFF AND JIGGER—TRAWL NET—KEER DRAG—DRIFT NET—THE SEAN—TUCK NET—SHRIMP NET—CRAB AND PRAWN POTS — THE DREDGE — THE SPILLER—THE BOLTER BULTOE — LINES — SILKWORM GUT — LEADS—HOOKS—REELS—SNOODINGS—KNOTS.

PLATE III.



Nos. 1, 2, 3, 4. Leads or sinkers.
No. 5. Fishing Reel.
„ 6. Sheave, for spinning Lines.
No. 7. Shovel.
„ 8. Creeper.
„ 9. Spreader.

CHAPTER I.

APPARATUS.

THE KILLICK.

This will be found a decided requisite with every fishing boat, especially on a rocky coast. It is made (see Plate IV, No. 2) with a heavy stone of about twenty or twenty-five pounds in weight; a groove is made round it across the middle, round which a forked stick is placed and clipped tight; a piece of curved wood is then fashioned somewhat like an anchor-head, and two holes made in it to place the ends of the forked stick through, and, when firmly driven home, a nail is put in each to secure them; a rope is then made fast to the end of the forked stick, and the killick is ready for use. They are always used on rough ground, where the "creeper" or "anchor" would retain so firm a hold of the ground as to

prevent its being hauled up. Stones are much used to anchor boats when fishing, but the above is the most convenient mode of using them.

THE CREEPER

Is a kind of anchor made of iron, for use in small sailing or rowing boats, on muddy or sandy ground; it is made with four or more claws (see Plate III, No. 8), so as to catch the ground in whatever position it reaches the bottom, and hold the boat without dragging from her original position; in the centre, where the claws spring from the shank, is a loop or ring, the use of which is to fasten the rope very firmly, and then to lead it back to the ring at the other end of the shank, where it is simply fastened with a piece of twine, so that in case the creeper is caught firmly by a rock or any other obstruction a strong pull will detach or break the twine, and cause the line attached to the crown to pull out or withdraw

the claws which hang. These precautions are very necessary, as one never knows what obstacles he may meet with in a day's sea fishing.

Another kind of creeper is made for conger fishing with the bultoe, by casting a heavy conical mass of lead with six or eight pieces of bent brass wire cast into the end; this form of creeper is used on rocky ground, so that, when the bultoe is pulled in, if it sticks at the bottom a good pull bends the wire and frees it, without in any way injuring it (see Plate IV, No. 5).

SPILLER STICK OR RACK.

The frame on which the spiller, when dry, is kept for use is made by cutting a piece about three inches wide from a bit of inch fir plank, and making a slot on one side, into this the back is carefully coiled, the hooks being placed in rotation in a smaller groove cut in the opposite side of the wood; the whole is about two feet

long and three inches wide, and the lower end is cut so as to fit securely into one of the thowle holes when being baited or coiled up (see Plate IV, No. 4). This can be easily made in about half an hour by any one possessed of the least mechanical ingenuity.

THE COCKLE HOE.

The hoe used in gathering cockles is much the same as that used in the garden or field for hoeing turnips, the only difference being in the length of the iron neck, which is lighter and longer in the cockle hoe than in the common one (see Plate IV, No. 8). When gathering cockles the hoe is used to dig in the spot which from the mark shows the cockle is beneath, and in the course of a couple of hours a bushel basket is often filled by a boy expert in its use.

THE GAFF AND JIGGER.

(Plate II, Nos. 5 and 6.)

The gaff is much the same as that used by salmon and pike fishers, with the exception of the handle being shorter and somewhat stronger, as when rays, congers, ling, and other large fish of great weight, are to be lifted into the boat a very strong handle of ash is required, with the steel hook or gaff very firmly fixed in, with twine and wire bound round it. The jigger is used in catching the squid, and is made by tying with waxed twine four or six bass hooks to the end of a straight hazel stick about five feet long; when to be used it is gently lowered under the squid, and then to be raised quietly up so as to touch it, when the alarmed fish darts back and impales itself on the hooks, merely requiring to be pulled into the boat.

TRAWL NET.

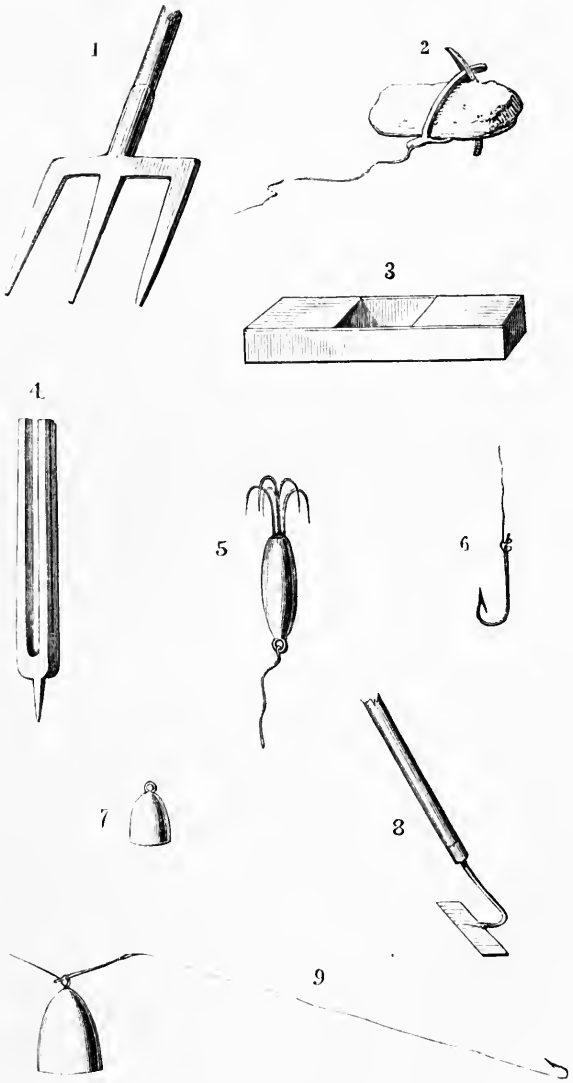
The trawl net (see Plate II, No. 1) has a beam of eighteen or twenty feet in length, the extent of the beam being the breadth of the mouth of the net, and the length of the net is from sixty to seventy-five feet. In the representation of this net the rope on the extreme left running through the block is called the trawl-warp, and is the only communication or connection between the boat and the net when the net is overboard. The ropes passing obliquely from the block to the two sides are called the bridle, and serve effectually to keep the open mouth of the net square to the front when the net is drawn along over the ground by the boat. The trawl-beam is four inches in diameter, and is supported at the height of twenty or twenty-five inches above the ground by a heavy frame of iron, of a particular form, at each end of the beam, called trawl-heads, which assist by their weight to sink the net and keep it on the ground. The upper edge of the netting is attached along the whole length of the beam; the lower edge is fastened along a heavy rope,

called the ground rope, and follows considerably behind the advanced straight line of the beam, forming the portion of the circle seen through the upper surface of the net in the representation. This sort of net is only adapted for taking those fish that live upon or very near the bottom; when drawn along, the first part of the net that touches the fish is the ground rope, from the contact of which the fish darts upward, but the part of the net hanging from the beam is not only over but also in advance of him, while the onward draft of the net by the progress of the boat brings the fish against the closed end of the tail, and if he then shoots forward towards the mouth of the net he is stopped and entangled in pockets that only open backwards. As the fish in the tideway lie with their heads against the stream, the fishermen trawl with the tide, that is, draw the net down the stream, carrying only so much sail on their boat as will give the net the proper draft along the ground, generally at the rate of two and a half or three miles an hour. When it is desirable to examine the contents of the net the beam is hauled up to the side of the vessel by the trawl-warp, the tail of the net is handed in,

untied, and the contents shaken out. The produce, depending somewhat on the nature of the ground, generally consists of red mullet, different species of gurnard, flat-fish, skate, ray, with abundance of *Asteria, Crustacea,* and *Echini.* The saleable fish being selected, the tail of the netting is retied and the net again lowered to the ground, and while the vessel continues its course the refuse of one haul of the net is swept overboard to make room for the produce of the next.

On some parts of the Dorsetshire and Devonshire coast the trawling boats and their apparatus are much larger than those here described, the former being cutter-rigged vessels of seventy or eighty tons burden, and their nets of thirty-six-feet beam. Where the water is deep this mode of fishing is successfully practised either in the day or night; but if the water is shallow and clear but little success is to be obtained in the day. On the coast of Norfolk trawling has been followed during the last few years with great success, the number of smacks sailing from Yarmouth alone numbering from eighty to ninety, each making eight trips a year, and catching during that time from 140 to 160 packages of

PLATE IV.



No. 1. Fork for digging Worms.
„ 2. Killick.
„ 3. Bait Box.
„ 4. Spiller Rack.
No. 5. Bulter Creeper.
„ 6. To tie on Gut to Hook.
„ 7. Head.
„ 8. Cockle Hoe.
No. 9. To attach Line for Whitling.

fish; but some experienced masters say that, allowing for mishaps, the average is not more than 1000 packages per smack per annum. The kinds of fish caught by these vessels are soles, cod, turbot, haddock, whiting, brill, plaice, and skate; these fish are caught the whole year round, but from the beginning of August to the middle of November the plaice almost entirely disappear.

THE KEER DRAG.

A small but very useful net for bottom fishing and making collections of various sea fish can be easily made; it is called a keer drag, and is used where the bottom is smooth; the sketch (Plate II, No. 2) shows how it is made. The bottom and sides of the oblong mouth of the net are formed of an iron rod about seven feet long, of which about fifteen inches at each end are bent round, and at right angles to these ends a straight beam of wood three inches in diameter is fixed,

which should be rounded for the convenience of handling. The wood, by its buoyancy, when the net is in use in the water, tends to preserve the vertical position of the framework. In the mouth of the net thus formed by the union of the iron and wood a piece of netting is to be applied all round, which should diminish gradually, both in the size of the net and its mesh, till at the distance of seven or eight feet from the framework it should terminate in a round open mouth, about the size of the top of a stocking. The mesh of the net for the last three feet should be very small, as it is at this part the most strenuous efforts to escape will be made, particularly by the Syngnathi. The net is to be drawn along the ground by a small rope over the stern of the boat, which should not be rowed fast. This tow-rope ends towards the net by a three-tie bridle, one of which is attached to the centre of the wooden beam; of the other two, one goes to each side, and thus the mouth of the net is not only kept square to the front, but its vertical position is also preserved.

The open tail of the net being closed and securely tied, and the apparatus put overboard

from a row-boat, keeping hold of the tow-rope and taking care that the mouth of the net preserves its position, it should be towed leisurely about, the iron bottom traversing the ground and the quantity of contents obtained soon leads to a knowledge of the best localities. Should the mouth of the net get foul of any opposing substance on the ground, it is only necessary to push the boat back in the line of its previous course and the net comes clear, being thus pulled upon in the opposite direction.

When inclined to examine the net, the framework may be raised by the tow-rope high enough to lodge the wooden beam over the edge of the boat's stern, but higher than that is unnecessary; the tail of the net is to be hauled in, untied, and the contents shaken into a tub for examination. The tail of the net being retied, the frame may be lowered and towed about as before, and while the net is again at work at the bottom the collector may be engaged over the contents of his tub at the top.

DRIFT NET.

Drift nets are used in the mackerel, herring, pilchard, and other fisheries, the only material difference in them being in their size, number, and depth of nets, and the size of the mesh, the number of nets being generally regulated by the size of the boat or the means of the owner; about eighteen to twenty-five is the usual number. The nets are from eighteen to twenty fathoms long each and seven fathoms in depth, and a string of driving nets are from half a mile to a mile in length. These nets are attached to one another end to end, and to a headline, along which runs a row of corks; another rope is run loosely through the middle of the nets, to afford additional strength, but the nets are *never* weighted with lead at the bottom. These nets are usually carried in boats from seven to twenty-five tons. Fishing commences just before sunset, and, about two hours after, the nets are drawn, so as to be shot again just before morning. The nets are fastened to the boat's quarter by a rope from the end of them, and they are left to float about with the

tide; sail is hardly ever set, except in exceedingly calm weather, to prevent the nets being folded together. In the herring fishery a system is followed of using fewer and smaller corks along the head-rope, and by placing at proper distances cords, to each of which is fastened a strong buoy. These cords are two or two and a half fathoms long, and allow the upper edge to be that depth under the surface, but even now it is observed that the greatest number of fish are taken at the bottom of the net. Another advantage is that vessels pass over the nets when buoyed as above stated.

THE SEAN.

The sean is a large net about 250 or 300 fathoms in length and twelve fathoms in depth, the whole buoyed along the head-rope with corks and weighted at the bottom with leads; the ends are kept spread open by poles, the lower ends of which are weighted with lead, so as to keep the

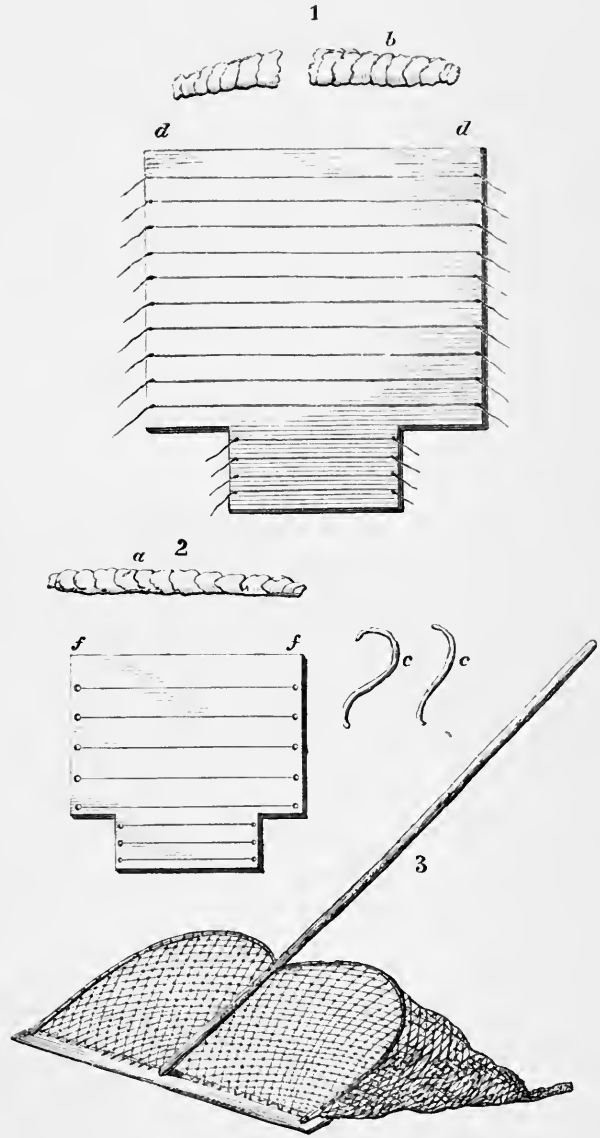
bottom of the net near the ground. The sean is generally used to surround large shoals of fish when they approach the shore; mackerel, herrings, pilchards, mullet, and some other kinds of fish, are taken in this way, and in many instances return very large sums to the fishermen. The sean, with the necessary ropes attached, often reaches a mile in circumference from one end of the rope to the other, thus enclosing and taking all the fish within that space, and occupying several hours in *shooting* and hauling in. Often smaller nets are used, with a large bunt or bag in them, to remove the fish from the sean, as when a large catch is made they do not at once draw the net on shore, but moor it and dip out the take with the auxiliary net, which is usually one hundred fathoms in length. This net is called the "*tuck* sean," and the other the "*top* sean;" these nets are always kept ready for use at a moment's notice, as at all seasons some kind or other of fish in immense shoals may visit the coast and call the nets into use.

TUCK NET.

The *tuck* net is in almost daily use in the various estuaries and river-mouths of the coast, especially where there are large mud flats and alluvial deposits, as these are the most favorable spots on which to use the *tuck* net. It is a net about twenty-five fathoms in length, but is varied according to circumstances, and from six feet at the ends to thirty in the bunt or hollow, the upper part is kept spread open by poles or spreaders, weighted at the end with lead, and attached to the rope by a bridle from each end of the pole; the bottom of the net is weighted with lead. These nets are placed in boats rowed by three or four men, and, on the ground for shooting being chosen, a man steps on shore with one end of the rope in his hand and the boat is rowed in a circle as speedily as possible, so as just to enable the end of the other rope to reach the shore, enclosing the space within the ropes and net. As soon as the first rope is run out an old and experienced hand commences throwing over the net, taking care to spread it a little each time, so as prevent its twisting, and to

enable the corks to float and the lower-leaded edge to sink to the bottom. The net being *shot*, is then gradually pulled in, care being taken to keep the two ends equal as they come on shore. This kind of net is very much used on the coast by gentlemen who club together for the purchase of one, and during the summer make parties for a day's fishing, the net boat being accompanied by other boats filled with the lady friends of the fishing party, who make it a *pic-nic* whilst they are rowed after the net-boat to observe the sport obtained. Some years since a number of the clergy inhabiting the shore of an estuary on the coast of Devon started one of these nets, and were most regular in pursuing this sport; in the end they became known in the vicinity as the "*Simon Peter Society*," from having in these degenerate days taken up the calling of the great apostle. Every kind of fish known to our shores is taken in these nets, and afford quite a study for the naturalist, as not only fish, but nearly all varieties of crustaceæ and shell-fish, are taken at times, and the most beautiful sea-weeds are found adhering to the net.

PLATE V.



Nos. 1, 2. Frames for making Silkworm Gut.
No. 3. Shrimp Net.

SHRIMP NET.

Shrimp nets are of various forms, to suit the localities in which you intend to search for prawns or shrimps. The net shown on Plate V, No. 3, is the kind most generally used when the edges of the weedy foreshores of estuaries are to be shrimped; it is made of wood, and consists of a narrow plank in front, about four or five feet in length, to the centre of which a pole is fastened to form the handle; it is so arranged that the plank in front always has its edge in such a position as to scrape along the ground and secure anything which may happen to be on the surface; from either end of the plank a stout willow rod is bent round so as to form a bow, and is then inserted in the pole, as shown in the sketch; to the hinder margin of the plank and all along the bent willows the net is secured so as to hang loosely, and is terminated with a long bag, named a *purse*, into which, in their attempts to escape, all the fish that are captured are carried by the water, which, from the force with which the net is pushed forward, forms quite a current. Another

form of net much used to search for prawns in the ponds which are found on the mud flats is shown on Plate VI, No. 1; it is made with a stout piece of iron rod bent into the shape of the letter D, with the straight side of the letter as the front, to travel over the ground; from the centre of the bow a point sticks out, so as to be driven into the handle with which it is guided, or it may be formed into a socket and the pole inserted, the net being stretched on the wire so as to hang in a kind of bag terminating in the usual purse. A round net made in the same way is used to catch prawns which are left by the tide in holes amongst the rocks at the mouth of the Thames, particularly at Gravesend, and in some other places a kind of trawl net is much used for capturing the gray and the red shrimp, tons of which are caught in a season for the London Market.

Another kind of net is sometimes used for the purpose of closing a narrow part of an estuary, so as to retain any shoals of fish which may be in the upper waters at the time, the gray mullet being the fish usually sought after in this kind of fishing. The proceeding is as follows. Having decided on the spot, a long line of poles is placed

firmly in the mud, or gravel, where at low water it is dry. A pulley is fastened to the top of each, through which the various lines attached to the upper edge of the net pass, the net having been laid along the inside of the poles and the bottom fastened to the ground firmly. The fishermen wait till the tide has risen and is about to turn, when a quantity of boats put off, and all at the same time pull up the net and secure it firmly to the tops of the poles, thus effectually securing any fish which may happen to be within the net at the time; they then patiently wait till the ebbing tide leaves the fish in the creeks and pools, when sometimes a valuable booty is secured, and at others not a single fish is taken.

CRAB AND PRAWN POTS.

These useful engines for the capture of various crustaceæ are made of various materials, the most common being of wicker work (see Plate VI, No. 2); others are made of strong galvanized-iron-wire rods; and I intend trying prawn pots made

of a wire frame covered with net, so that when not in use they may be folded up and put away in a small space. The trap, when open, is about fourteen inches broad and eighteen inches long, the depth being one foot (see Plate VI, No. 3). The wicker crab pot is usually made for 4*s*. 6*d*., and can be obtained at almost any fishing village on the coast; they are, when about to be used, weighted with three or four stones of from six to ten pounds each, which are firmly secured inside with rope yarn, and to the side is attached a long rope with a large cork buoy at the end, and smaller pieces of cork at every four or five feet, so as to float the line with sufficient power to resist the tides, the power of the flow and ebb of which would otherwise draw the line under and prevent the raising and examination of the pots. Prawn pots of wicker are almost exclusively made in the Isle of Wight, where they can be purchased for about half-a-crown each. They are used in just the same way as the crab pot, only the ground chosen is nearer the shore, in a much smaller depth of water. The bait to be used for the capture of crabs must be perfectly fresh; those for lobsters and prawns, on the contrary, are better

for being tainted. In fishing with the pots they are usually set overnight, and examined in the morning.

THE DREDGE.

The dredge is another useful implement, much in request by fishermen for the purpose of taking oysters, scallops, &c., and by naturalists in making collections from the wonders of the ocean, which are so well described in the Rev. Charles Kingsley's 'Glaucus.' The dredge is made of iron, and shaped like a scraper (see Plate II, No. 4); attached to it is a net bag, made of spun yarn (which, being soft, is not so liable to cut against oyster shells, &c., as a harder kind of line would be) and sometimes of wire rings on the under side, and is kept open by poles placed at intervals and attached firmly to it. The dredge, when about to be used, is tied securely by the ring to a strong rope and lowered over the boat's stern with the

scraping edge downwards, until it reaches the ground, when, a good length of rope having been veered out, it is fastened, and the boat rowed away until a sufficient space of ground has been passed over, when it is hauled in and emptied into the boat on a tarpaulin (to keep the boat clean), and then thrown overboard to be again towed, whilst the produce of the former haul is examined and the useless portion rejected. The scraping edge, which collects together the contents of the net, sometimes catches hold of the rocks or any uneven substance at the bottom, and to be cleared it is necessary to reverse the direction of the boat, so as to *trip* the dredge, as it is called, and then you can proceed as before. Many hours' amusement and some good catches can be obtained by this implement, the finest oysters and scallops, &c., being brought to the surface by it. Any blacksmith on the coast can make it, and the net is readily fitted by most fishermen if you cannot do it yourself. In larger vessels, when dredging for a cargo, six and sometimes eight dredges are used, and then the end of each rope is attached to a buoy, and when used is fastened by a small piece of string to the vessel, so that, if it catches the

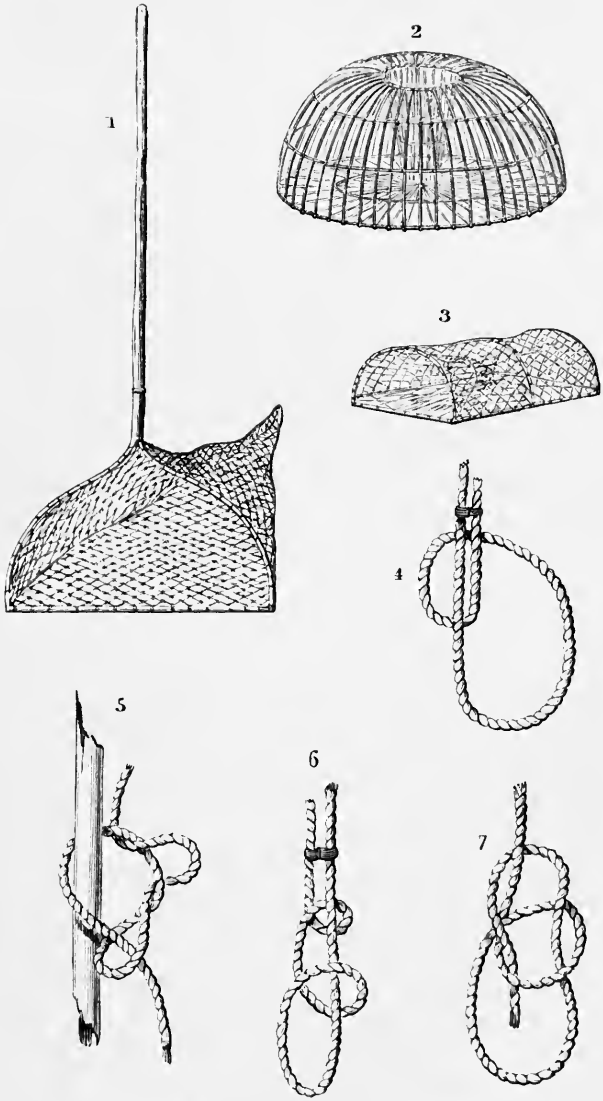
bottom and hangs, the string breaks and the buoy goes overboard, marking the place for a boat to go and pick up the dredge.

THE SPILLER, LONG LINE, OR TROT.

Spiller fishing is generally very profitable to those who pursue it, and is amusing to the amateur from the variety and quantity of fish caught, mostly those which inhabit the bottom of the sea, such as the plaice, dabs, flukes, flounders, small rays, pipers, gurnets, connors, congers, &c. The spiller is constructed in the following manner. Procure a strong piece of hemp line not quite as stout as a drawing pencil, from 100 yards to one mile in length, called the "back," and at every fathom or so is fixed by a properly prepared piece of twine a hook; this piece of twine is prepared by cutting a portion from the hank twice as long as you will require, then take an old sheave of a block, putting a cork in the hole in which the pin

went, and driving through the cork a nail or bit of wire bent in the form of a hook (as per Plate III, No. 6); the line is attached by one end to this hook, and the sheave made to revolve smartly by blows with the right hand, the other end of the line being held in the left hand; when sufficiently twisted you remove it from the sheave, and placing it by the middle on the hook you again cause the sheave to revolve so as to twist it up into a close twine. When finished it makes a very strong line by which to fasten the hook which is to hold the fish you may be fortunate enough to have caught. The hook is fastened to the twine by a couple of "*half-hitches*" on the shank of the hook (the hooks used should be of the size usually employed in taking "pollock"). The next thing to be done is to prepare some strong lines and attach cork or other buoys to them, and these lines are fastened to some moderately heavy stones, to act as anchors for the spiller itself. Having selected your ground and baited the hooks, either with lug, bits of cuttle-fish, or some sand-launce, you may commence to lay or *shoot* the spiller, which is done by putting overboard the buoy and attaching one end of the back of the spiller to the stone, and then

PLATE VI.



No. 1. Small Shrimp Net.
„ 2. Crab Pot.
„ 3. Network Prawn Pot.
No. 4. Half Hitch.
„ 5. Timber Hitch.
„ 6. Clove Hitch.
No. 7. Bowline Knot.

letting the stone or anchor out by degrees until it reaches the ground; the boat should then be slowly rowed in the direction you wish the spiller to lie in, which you must gently allow to pass overboard, keeping it at the same time moderately tight, and, when quite payed out, you should take care to have it quite straight by keeping a light strain on it until you have taken out the waste coils, then over with the other stone and buoy, and let it remain for four or five hours, when you can pull it in in the same manner as you payed it out, and very probably nearly every other hook will have a fish of some kind or other on it. Many baskets-ful may be seen as the results of a day's fishing of this kind, and generally they are the most delicate of their several kinds, as those only which are on the feed are caught, and not so indiscriminately as they are with the trawl. The spiller, when done with, is stowed away very neatly; the *back*, having been detached from the stones, is coiled on a piece of wood with a slit cut in it to receive the line, and the hooks go on a piece of wood on the opposite side, made by another small slit in the wood; the lower part of the frame is cut so as to go into one of the holes in the gun-

wall which are used for the tholes, it being the most convenient position when coiling up the spiller after it has been dried.

The ray spiller is just the same, only differing in the size and strength of the hooks and their increased number; the bait generally used is pieces of the squid, launce, or the pilchard, split in half and then cut into smaller pieces. In this fishing you must set the spiller just before sunset, and haul it again in three or four hours.

THE BULTER, OR BOLTER, FOR CONGER, LING, RAY, &c.

The bulter is just the same in principle as the spiller, only it is made on a much larger scale; the back is infinitely stronger, the hooks are larger, and the line near them guarded with brass wire some distance above the hook, and, from the necessity of shooting it in very deep water off at sea, is anchored by a particular kind of creeper (see Plate IV, No. 5), and the boat, which is usually

several tons' burden, is always anchored at one end of the bulter, the tide being so strong off at sea that any buoy would be submerged, or, from the want of landmarks, it would be impossible to find it again when once shot. It is generally set or laid of an evening, and hauled again in the morning at the turn of tide, when often many hundredweight of fish are the result of the night's work, consisting of enormous congers, rays, ling, cod, brill, dog-fish without end, and many other kind of bottom fish. Mackerel cut in four, squid, pilchard, herring, or any kind of fresh fish, make good bait for this kind of fishing; sometimes sharks are taken as they seize the conger and other fish when being hauled in. I have seen them on the coast of Devon from five to fourteen feet long; they are usually hauled alongside the boat and then ripped open with the long knives used by fishermen, and when dead are hauled on board the boat. Sometimes 200 or 300 hooks are used on a bulter; and a wine cork is firmly fastened on the back, or main line, at every eight to twelve feet, so as to keep the bait clear of the weeds. The best way in shooting it is to lay it *across* the tide, if possible, as fish when feeding usually swim with

their heads towards the current, and more ground is covered by so laying it.

LINES.

There are various kinds of lines made for coast fishing, known in the trade by different names, according to the size and purpose for which they are intended, and composed either of silk, horse-hair, hemp, flax, or cotton. Mr. R. Harrison, of Redditch, in Worcestershire, makes some of the most beautiful lines I have seen—eight-plait silk, waterproof; eight-plait hemp lines, waterproof; patent hair, and silk-and-hair lines; the prices being moderate for the excellent articles furnished. The following are some of the names as used at Bridport:—Mackerel line; fishing line; forty-yards long-shore line; fifteen-thread St. Peter cod line; hog line; Hambro' line; deep-sea line; bank line; eighteen-thread St. Peter cod line; fishing line, forty yards, twelve pounds; do., size smaller, nine pounds; do., three pounds; do.,

pollack line. All these lines are the most perfect of their kind, and with care will keep for many years; they can be barked if thought advisable, and I should by all means recommend their being done, as they will only take about forty-eight hours' doing, and the cost is next to nothing. Another good plan is recommended by a correspondent in the 'Field' newspaper, who writes under the signature of "W. W." He says, make a coil of your line, which should be bound round in three or four places with thread; take of best glue half a pound, water a little more than half a pint; place in a large pipkin or other convenient vessel; warm gradually until the glue is thoroughly dissolved and quite clear, when your coil of line should be put in and boiled for twenty minutes. Take out your line, cut the bands, and lay it on the grass, a dry day, of course, being chosen for the operation, arranging it up and down like the teeth of a large saw, so that the strands shall not come in contact. In about four hours it will be dry, when it must be recoiled round the hand and placed in a boiling solution of catechu, half a pound of catechu to one pint of water; keep boiling for three quarters of an

hour, remove it from the solution, and hang it up to cool for a quarter of an hour. When cool wash it well in clear cold water, and dry for use. I think this will be found a very useful receipt for treating sea-fishing lines of all kinds, the preserving qualities of catechu being well known.

To make a mackerel line of hemp or flax, purchase a hank of what is usually called mackerel or whiting line, and, having seen that it is quite sound, join it with a water knot (see plate showing knots) to about two fathoms of snooding at the end of the line, either silk or the finest hemp that is made; to this is then attached some strong gut at least a yard in length, two or three strands thick, the end being secured to the hook. When whiffing, leads of various weights as sinkers (see Plate III, Nos. 1, 2, 3, 4) are attached just at the point of junction between the line and snooding; the line then, having been wound on a reel (see Plate III, No. 5), is ready for use, and with a launce or last is almost sure to reward the fisherman for his trouble. Almost all kinds of fish are taken with this sort of line, the strength of line or gut being varied with the weight of lead for either top or bottom fishing. In some cases two

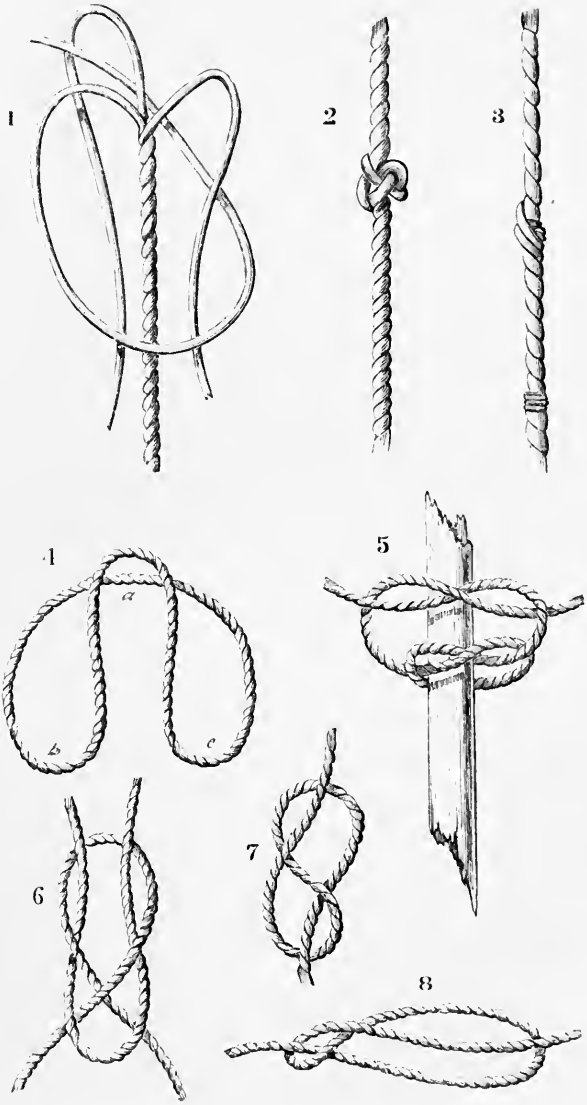
hooks are attached, a spreader being used for bottom fishing (see Plate III, No. 4), and sometimes in another way for whiffing (see Plate IV, No. 9). Lines are also made by fishermen of horsehair, and are exceedingly strong and lasting. The method adopted is rather primitive, viz., the tail of a young colt having been procured, usually at the cost of half-a-crown, the iron-gray colour being preferred, it is hung up until the hair can be easily pulled out. When ready the hairs are collected and sorted according to size and length and made into bundles; the operator then proceeds to take about a dozen hairs, which are tied to another dozen and fixed to the hook in the sheaf of a block (see Plate III, No. 6), and the sheaf set spinning by the hand until the hairs are twisted into a compact mass; the cord is then detached and placed by the middle on the hook and spun the reverse way until quite firmly wound together, when it is laid aside for more to be prepared in the same way. When enough are ready they are carefully joined by a *double* water knot (see plate of knots, Plate VIII, No. 9) until the line is of sufficient length, when the usual snooding and gut, &c., is attached. These lines, when

one is accustomed to them, are very comfortable to use, especially in the winter, as the knots give a firm hold on the line when the hands are cold, and with a large fish the smooth line would slip through the fingers. The colt's tail will generally make two or more lines.

SILKWORM GUT.

Gut for fishing is made as follows. Select a number of the best and largest silkworms, just when they are beginning to spin, which is known by their refusing to eat and having a fine silk thread hanging from their mouths; immerse them in strong vinegar and cover them closely for twelve hours if the weather be warm, but two or three hours longer if it be cool. When taken out and pulled asunder, two transparent guts will be observed, of a yellow-green colour, as thick as a small straw, bent double; the rest of the entrails resemble boiled spinach, and therefore can occasion no mistake. As to the silk gut, if this be

PLATE VII.



No. 1. Diamond Knot.
„ 2. Ditto, when tight.
„ 3. Buoy Rope Knot.
„ 4. Slings.
No. 5. Reef Knot.
„ 6. Sheet Bend.
„ 7. Overhand, or figure of Eight Knot.
No. 8. Timber Hitch.

soft, or break upon stretching it, it is a proof that the worm has not been long enough under the influence of the vinegar. When the gut is fit to draw out, the one end of it is to be dipped into the vinegar and the other end is to be stretched gently to the proper length. When thus drawn out it must be kept extended on a thin piece of board, by putting its extremities into slits in the end of the wood (see Plate V, Nos. 1 and 2) or fastening them to pins and then exposed in the sun to dry; in this manner the best gut is made in Spain. From the manner in which it is dried the ends are always more or less compressed or attenuated. Fig. 2 *a* is the silkworm; *b*, the worm torn asunder; *c c*, the guts; *d d*, a board slit at the ends with the gut to dry; *f f*, boards with wooden pegs for the same purpose. The before-going description is taken from Ure's 'Dictionary of Arts,' &c., 1860. The largest importer of silkworm gut is Mr. R. Harrison, of Redditch, who will furnish any amount of any quality that can be required.

LEADS FOR WEIGHTING THE LINES.

Leads are a very requisite part of a sea-fisherman's tackle, and are easily made of any form required. For bottom fishing you have conical-shaped leads of any weight from an ounce to many pounds (see Plate IV, No. 7); for surface fishing there are boat-shaped leads (Plate III, No. 1), and various other forms. To make them some fine loam or sand is necessary, which having been damped and the shape or pattern you require made in wood and pressed into the sand, the melted lead is poured in and soon cools of the desired shape, only requiring some scraping or hammering to make it fit for use. I have cast fishing leads of conical and other shapes in coarse brown paper by carefully rolling the paper round the pattern and securing it with a pin, then placing the paper mould in a basin or gallipot and fixing it there by some pieces of wood. When the lead is melted and ready for use pour some water into the basin round the paper mould, and then before it can penetrate the paper, run in the

lead; this is a very speedy plan, saving the trouble of using sand, &c. Holes are made at either end in any direction with a gimlet much more easily than they can be cast, but if wire loops are wanted in the lead they must be cast in when made. A good kind of lead for catching flat-fish is made by fixing in a heavy conical lead (see Plate III, No. 4) a piece of wire from two to three feet long, with a hole at each end, to which a foot or eighteen inches of gut are attached, finishing with a hook; this, when lowered to the bottom, often brings up a couple of fish. I have taken many in this way from Southend Pier, on the flood-tide, having at times a flounder and shad-herring on either hook. Other forms of lead, when required smaller, are easily made by taking sheet lead, folding it up, and cutting off the requisite size with a hammer and knife. When used it is only necessary to open it and, inserting the line, close it tightly on it (see Plate III, Nos. 2 and 3). Some people take a Bath-brick and scoop out the shape required for the lead, but this gives much more trouble than sand, and is not, therefore, advised for general adoption.

In making conger lines for deep-sea fishing it

is only necessary to have stronger lines and *no* gut. The hook of the largest kind is fastened by some loose twine covered with brass or copper wire, in fact, a very large kind of gimp, as, if the line is not guarded in this way, the fish will bite clean through it and escape. The leads used are very heavy, and often have wires let into them in the form of creepers. Lines in general are only varied in strength according to the kind of fish to be sought for.

HOOKS.

There are many kinds of hooks made for the fishermen of our coast, and for other markets, which are known by various local means; but I think it better to give the names generally known and applied to hooks for the West Indian market The names are as follow:

Full stout hogfish . . .	No. 1 sea.
Full hogfish	„ 2 „
Small „	„ 3 „

Full porgy	No. 4 sea.
Small „	„ 5 „
Yellow tail	„ 6 „
Full bream	„ 7 „
Small „	„ 8 „
Rock fish	„ 9 „
Full pilchard	„ 4 river.
Small „	„ 6 „
Full bait	„ 9 sea.
Small „	„ 13 „
Shark hooks	„ 000 sea.

There are other varieties of hooks, but the best are those made by Mr. R. Harrison, of Redditch, and Kirby, Beard, and Co., of Cannon Street, City; these are conger, bass, bream, pollack, mackerel, whiting, chad, and many other hooks known by names suited for the kind of fish to be captured. They are wonderfully cheap, and, as far as hooks are concerned, there can be no excuse for people not taking fish when in season. The way of fixing hooks or lines is shown on Plate II, No. 26, the line or gut being passed round with two half-hitches.

REELS.

Reels are usually made with four pieces of wood put together in the form of a square, as shown in Plate III, No. 5. The great advantage of this form is that it admits a freer current of air to dry the lines; the size is, of course, regulated by the size and length of the line they are to hold. In making them, oak or sound deal is generally used, a small bung or piece of cork being placed on one of the framebars, for the purpose of sticking the hooks into and keeping their points fine and sharp.

SNOODING

Is of various kinds, being made of hemp, flax, or silk, according to the fineness required. It can be procured of any size at fishing-tackle makers', or any shop on the sea coast. Snoods are usually from one yard to four in length, according to the kind of fish you are in pursuit of.

KNOTS AND HITCHES.

Knots are made in joining or attaching ropes, &c., together, and are very numerous. *Hitches* are a kind of knot or noose by which one rope is fastened to another, or to a post, ring, timber-head, &c.

Plate VI, Fig. 4, in the plate is called a half-hitch.
,, ,, ,, 7, is a bowline knot.
,, ,, ,, 6, is a clove hitch.
,, ,, ,, 5, is a timber hitch.
,, VIII, ,, 5, is a magnus hitch.
,, ,, ,, 1, is a Blackwall hitch.
,, VII, ,, 1, is a diamond knot.
,, VIII, ,, 6, is the above when hauled tant.
,, VII, ,, 3, is the buoy-rope knot.
,, VIII, ,, 5, is a rolling hitch.
,, ,, ,, 6, is a double diamond knot.
,, ,, ,, 12, wall knot.
,, VII, ,, 7, figure-of-eight knot.
,, ,, ,, 7, reef knot.
,, ,, ,, 4, slings.
,, VIII, ,, 3, carrick bend.

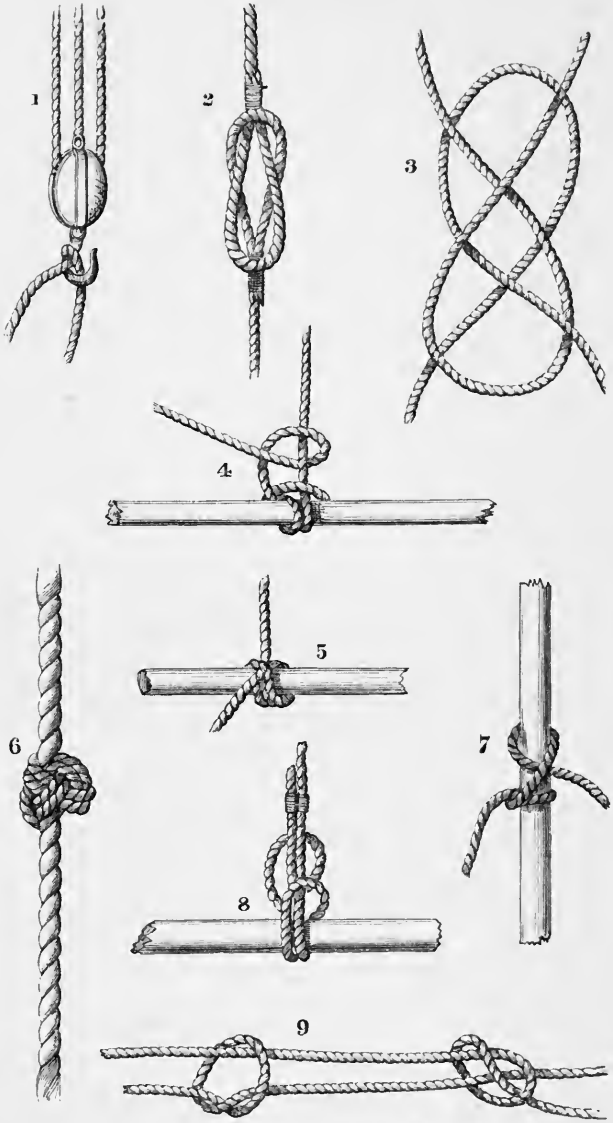
Plate VII, Fig. 6, sheet bend.
„ VIII, „ 4, fishermen's bend.
„ VI, „ 6, clove hitch.
„ VIII, „ 2, loop slip.
„ „ „ 9, gut knot.
„ VI, „ 5, timber hitch.

To hitch a rope is to pass its end *a* round the standing part, then bring it up through the bight, and seize it to the standing part at *b*. This is called a *half-hitch*, and two of these, one above the other (Plate VI, fig. 6) is called a *clove hitch*.

Plate VI, fig. 7, the *bowline knot*, is made by laying the end of a rope *a* over the standing part *b*, and turning a bight over the standing part; then leading the end round the standing part, through the bite again. When this knot is drawn close it makes a loop; and when fastened to the cringles of the sails they must break or the sails split before it will slip.

Plate VI, fig. 5, and Plate VII, fig, 8, are called *timber hitches*, and are made by taking the end of a rope *a* round the spar or timber-head, leading it under and over the standing part *b*, and passing several turns round its own part *c*.

PLATE VIII.



No. 1. Blackwall Hitch.
„ 2. Loop Slip.
„ 3. Carrick Bend.
„ 4. Fisherman's Bend.
No. 5. Magnus Hitch.
„ 6. Double Diamond Knot.
„ 7. Clove Hitch.
„ 8. Rolling Hitch.
No. 9. Gut Knot.

Plate VIII, fig. 5, is a *magnus hitch,* and is made by passing two round turns with the end of a rope over a spar *a,* then bringing it before the standing part *b,* passing it again under the spar, and up through the bight which it made, the end part being jammed by the bight *c.*

Plate VIII, fig. 1, the *Blackwall* hitch, is made by putting a bight of a rope over the hook of a tackle, as represented in the figure, and letting the part *a* rest upon it, and the part *b* be jammed by the standing part at the cross. This is used in many ways, but generally with a lanyard when setting up the shrouds on board a vessel.

Plate VII, fig. 1, the *diamond* knot (and Plate VIII, fig. 6, single and double), is made by unlaying the end of a hawser-laid rope for a considerable length, and with the strands form three bights down its side, holding them fast. Put the end of the strand *a* over the strand *b,* and through the bight of the strand *c,* as represented in the figure; then put the strand *b* over the strand *c,* and through the bight formed by the strand *a,* and the end *c* over *a,* and through the bight of *b.* Haul these taut, lay the rope up again, and the knot will appear like Plate VII, fig. 2. This knot

is used in a variety of ways. The double-diamond knot is made with the strands opened out again, following the lead of the single knot through two single bights, the ends coming out at the top of the knot, and leading the last strand through two double bights, then, by laying up the rope again as before, to where the next knot is to be made, it will appear like the figure Plate VIII, fig. 6.

Plate VII, fig. 3, the *buoy-rope* knot, is made by unlaying the strands of the cable-laid rope, and also one of the small strands out of each large one; laying the large ones again as before, and leaving the small ones out; then *single* and *double wall* the small strands round the rope; worm them along the divisions, and stop their ends with spun yarn.

Plate VIII, fig. 4, the *rolling* hitch, is made in the following manner. With the end of a rope *a* take two round turns over the spar at *c*, then pass two half-hitches round the standing part *b*, and it is finished; the end may be stopped to the standing part.

Plate VII, fig. 7 is the *overhand* or *figure-of-eight knot*, and is made by taking the end of a rope *a* round the standing part *b*, under its own part *d*, and through the bight *c*.

Plate VII, fig. 5, the *reef* knot, is made by first forming a rope into an overhand knot round a yard or spar, bringing the end in the right hand over to the left, and the left to the right; then take the right hand end round the left, and draw them taut, and it will appear like Plate VII, fig. 5.

Plate VII, fig. 4, *slings*, are ropes fitted to encircle a cask, jar, bale, or case, and suspend it while hoisting or lowering. There are various kinds of slings, according to the weight or figure of the object to which they are applied. Those which are most frequently used in lading and delivering ships are represented by fig. 15, the tackle being hooked to the middle part *a*, whilst *b* and *c* are placed round the opposite quarters of the cask, &c.

Plate VIII, fig. 3, the *carrick* bend. To make it, lay the ends of a rope *a* and *b*, then pass it through the bight under *d*, and up through the bight *c*.

Plate VII, fig. 6, the *sheet* bend. In making it, pass the end of a rope *a* through the bight of another rope *b*, then round both parts of the rope *c*, *d*, and down through its own bight.

Plate VIII, fig. 4, *fishermen's* bend. This bend is made by taking two turns round a spar with

the end part of a rope; a half-hitch round the standing part *b*, and under the turns *a*; then another half-hitch around the standing part *b*. This is used for bending the studdingsail-halyards to the yard.

Plate VI, fig. 6, the clove hitch, is so simple that it need not be described beyond stating that it is made with two *half-hitches*.

Plate VIII, fig. 2, the *loop slip*, is merely made by taking two lines with loops worked at the end; in fixing it, one loop is put over the other, and then the end thrust through the protruding loop and hauled taut.

Plate VIII, fig. 9, the *gut* knot, is an exceedingly useful one for fastening gut together in fishing, and made by simply making a common knot round the gut with the piece to be attached, and then, by reversing it, fastening the end of the other piece in a similar way; the ends are then fixed with silk well waxed.

Plate VI, fig. 5, is the *timber* hitch; in fig. 4 also.

BAITS.

Sand Launce—Cuttle, or Squid—Pholas, or Sculpen—Lug-worm—Pilchard Gut and Pilchard—Pollock, or Mud-worm — The Last — The Mackerel — Flies —The Shrimp—Hermit Crab or Gann.

CHAPTER II.

BAITS.

THERE are many kinds of bait in use on the coast, according to season or the fish sought for.

THE SAND LAUNCE

Is one of great value, and is found in the sand near low-water mark, where they are sought for either by turning back the sand with a shovel (see Plate III, No. 7), or else by raking deeply with a special kind of rake (see Plate II, No. 3) or an old reap-hook that has had its edge quite ground away. These lively little fish are so exceedingly active that you must grab at them at

once or they burrow into the sand again and are gone in an instant. It is often made a moonlight trip to the sands, in the autumn, when the bait is wanted, both men and women going; and the sight is very pretty when all are in active pursuit and the fish are flashing about in the moonlight. When baiting with them it is usual to put the hook through the eyes; almost any fish will seize them with the greatest avidity, and as they always seize their prey by the head the simple act hooks them. The medium size is the best, and is generally chosen when there is a choice. It is in universal use for the spiller, when obtainable.

CUTTLE, OR SQUID.

There are several varieties of this singular fish, but all are of equal value as bait. They are caught with a jigger, as detailed at page 13, and when taken are carefully washed and cut into pieces the size of two fingers or less, and being

hooked at one end are used for bait in much the same manner as the launce. The squid is a favorite bait with most fish, but the conger, bass, and some few others, seem to have a great *penchant* for it. Bultoes are generally baited with it for conger, ray, ling, &c.

THE PHOLAS, OR SCULPEN,

Is a good bait for the spiller, and also for hooking with, especially in winter, when nothing else can be readily obtained for bait. These singular animals are found in soft rocks or the decayed wood which is usually submerged at all times but low water, spring tides, when they are obtained by digging for in the soft wood, which in some places on the coast is found in immense quantities, as though whole woods had been overwhelmed by the sea. They are divested of their shells when about to be used, and the tough compact fish hooked at one end so as to hang pendent from

the hook like a piece of squid. Most fish will take them, especially bottom fish.

THE LUG-WORM.

The lug, or lurgan, is a worm of a peculiar and, indeed, disgusting appearance, but at the same time is eagerly devoured by almost all fish, especially young codlings and flat-fish. These worms are found in the mud-banks of most estuaries, where their whereabouts is easily discovered by sundry casts near the hole they inhabit. They are found by digging for them with a very strong kind of prong (see Plate IV, No. 1) in the fisheries, at about half-tide mark, or else with the hands in the soft mud uncovered at low tide. The usual mode is to turn up the shirt-sleeves to the shoulders and the trousers above the knees, when, having walked out to the soft mud, you notice a small puddle, in the bottom of which there is a hole of some depth; into this

you thrust your naked foot (not flinching if a crab "nips" you), and then pushing down your hands on each side of the small mound until you can get no further, you then turn over the mud and find the lug in the piece of mud removed. The use of putting the foot into the puddle is to prevent the animal from backing into another hole communicating with the water. When taken they are carefully washed and placed in a basin till wanted, when the hook is inserted at the head and run down to the middle, where it is brought out and inserted two or three times, twisting up the tail so as to leave none hanging from the hook. This is a very unpleasant operation, not only for the worm, but for the operator, as a nasty, yellow, slimy liquid exudes from the worm and stains the hands, but, notwithstanding this, the lug is a most valuable bait.

PILCHARD GUT.

The entrails of the pilchard, or, as it is much more commonly called, "pilchard gut," is one of the most attractive baits known, and is much sought after both by fish and fishermen. It is simply the entire entrails of the pilchard, as removed when the fish are prepared for curing; in the centre there is a hard substance like the gizzard of a bird, and into this the hook is put, the pendent portion being coiled round the hook. This bait can only be used when at anchor, as the oily and fatty parts are washed out if towed through the water. Bass, gray mullet, and mackerel, as well as bream chads, are sure to be taken with it if in the vicinity; and to attract the latter, or, in fact, any and all kinds of fish, when at anchor, an old stocking or muslin bag is filled with the gut, and, a stone having been put in, is lowered to within about a fathom of the bottom, when the chads and other fish assemble in immense numbers to try for the dainty morsel, and are easily caught, two at a time, by letting down lines baited with the pilchard gut in the neigh-

bourhood of the bag. When chad fishing, always have a couple of light lines astern, carried out by the tide, as generally many mackerel are taken with them, and any passing fish is certain of capture. This bait can only be obtained when the pilchard is in season, which is from July to November, and if at a loss for it you can purchase some pilchards and extract the bait from them. This fish cut into half a dozen pieces is a very good bait, especially for the spiller.

THE POLLOCK, OR MUD-WORM.

(Sullis monilaris.)

This is one of the chief baits used by fishermen. It is usually found by digging with the hands or else with strong iron forks in the mud of the estuaries or creeks that run up from the sea. It is occasionally found under stones or old timber which has been long in one position. The abode of these insects is easily ascertained from the mud casts which they make above their dwelling. Boys are usually employed to collect or dig them,

and it is amusing to observe the rapidity with which they thrust their hands into the mud, turn over the mass, and extract the worm without injuring it, placing it in any old tin pot or earthenware basin; but as soon as the tide returns, and they have done digging, they at once wash them perfectly clean and put them in a broad flat box, known by the name of the "bait box" (Plate IV, No. 3). A little fresh sea water must be put to them each day, the dirt removed, and the stale water poured away; the box should be kept in a cool place, and, if carefully attended to, the worms will keep for a long time. In baiting with the pollock-worm it is usual to place a couple on the lid of the bait box and then run the hook through the necks just at the back of the head, letting the worm dangle at its full length from the hook. This bait can be used in any way, either at anchor or whiffing. The worms are generally sold by the diggers at from 3*d.* to 6*d.* per pint, which is usually enough for one or two days' fishing.

THE "LAST."

The "last" is a slice cut from the narrow part of the mackerel, near the tail, about two and a half inches long, and so managed as to be half blue from the upper part of the fish and half white from the under side. When used, this piece of skin is simply hooked through one end and thrown overboard, to be towed after the boat, and as it passes rapidly through the water resembles a small fish struggling to escape; it is very tough, and lasts a long time when kept in the water. I have taken half a dozen fish with the same bait, and then it has not been much the worse for wear.

THE MACKEREL.

The mackerel itself is an excellent bait for the conger, ray, ling, or large cod. It is chiefly used in bultoe or else in deep-sea line fishing, and

often sixpence each is given for them to be used as bait, but they generally return an immense profit.

There are many other baits used besides those enumerated, such as the mussel, oyster, cockle, bits of red cloth, strips of fish, the rind of salt pork, the "spoon bait," the "spinning bait," and also "flies."

FLIES.

Flies are used either with rods, as in river and lake fishing, or else by whiffing. White flies are found to be the best, and, when used of a night, large numbers of bass, mullet, pollack, or mackerel are taken. I have observed an old man-of-war's-man make a rough fly out of a large sea hook and some white pigeon feathers; the fly was put on a light line and the boat rowed at a good speed in a circle, and in nearly every case bass were taken, when his neighbours could not get a bite, and wondered at this man's success,

who often returned with a dozen or more fish of large size as the result of his superior tact. In the River Dart some years since a clergyman used to drift in his boat with the flood tide of an autumn evening, and fish with the white moth flies, and by this plan obtain good sport; his salmon rod was severely tried by the strength of a fifteen-pound bass. Often any rough composition of red and white feathers on a hook, with red sealing-wax for a head, is dignified with the name of a fly, but I much doubt if a salmon or large trout would be taken in with such monstrosities.

THE SHRIMP.

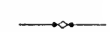
Shrimps, either fresh or boiled, are a very good bait, almost all fish devouring them with avidity, but especially flat-fish; the hook is inserted in the centre of the back, and brought out at the head, so as to give the appearance of swimming to the shrimp when the line is put overboard.

The bait must frequently be examined, and, if necessary, renewed, as from being used quite near the ground, it is exposed to attacks from the crabs of every kind which abound in the places where ground fishing is usually practised. If well salted when boiled, shrimps for bait will keep fresh for a good many days if put in a tin or wooden box. They are useful when there is a difficulty in obtaining lug-worms.

HERMIT CRAB OR GANN.

The soft tail part of this curious little fish is a good bait for some ground fish, the pout and most flat-fish readily feeding on them. This bait is much used about the Isle of Wight and up the Southampton Water—where the bait is to be got in any quantity from the dredging boats when fishing for oysters.

FISH.



The Mackerel — Conger — Bass—Striped Red Mullet — Gurnard — Piper — Father Lasher — Sea Bream — Pilchard — Herring — Sprat — Cod — Haddock — Whiting—Pollock—Coal-fish—Hake—Ling—Torsk — Plaice — Flounder — Dab — Halibut — Turbot — Brill, or Pearl—Sole—Launce—Long Nose—Smelt —Sturgeon—Spotted Dog-fish — Ray — Cuttle-fish — Pholas — Solen — Cockle — Scallop — Oyster — Mussel — Pinna —Whelk—Periwinkle—Crab—Lobster—Prawn—Shrimp—Hermit Crab, or Gann.

CHAPTER III.

FISH.

THE MACKEREL.

Scomber Scomber, Linnæus.
— *vulgaris*, Flem.

The mackerel is so well known for the beauty and brilliancy of its colours, the elegance of its form, and its intrinsic value to man as an article of food, both in reference to quantity as well as quality, that it is needless for me to say more. It was supposed by many to be a fish of passage, making, like various kinds of birds, periodical migrations, and performing long voyages from north to south at one season of the year, and the reverse at another.

It does not appear to have been sufficiently considered that fish, inhabiting, as they do, a medium which varies but little either in its temperature

or the nature of its productions, are removed beyond the influence of the two principal causes which make a temporary change of situation necessary. Independently of the difficulty of tracing the course pursued through so vast an expanse of water, the order of the appearance of the fish at the different places on the shores of the temperate and southern parts of Europe is the reverse of that which, according to the recognised theory, ought to have happened.

It is known that mackerel are now taken, even on some parts of our own coasts, in every month of the year. It is probable that this fish inhabits almost the whole of the European seas; and the law of nature, which obliges them and many others to visit the shallow water of the shores at a particular season, appears to be one of those wise and bountiful provisions of the Creator, by which not only is the species perpetuated with the greatest certainty, but a large portion of the parent animals are thus brought within the reach of man; who, but for the action of this law, would be deprived of many of those species most valuable to him for food. For if the mackerel were dispersed over the immense surface of the deep no effective

fishery could be carried on; but, approaching the shores as they do from all directions, and roving along the coast collected in immense shoals, millions are caught, which yet form but a very small portion compared with the myriads that escape.

On the coast of Ireland the mackerel is caught everywhere, but is not considered very abundant; on the Cornish coast mackerel are often caught as early as the month of March, and all the shoals appear to move from west to east.

They are very plentiful on the coast of Devon, and the west, or Bigbury Bay, swarms with them. During June or July, on the Hampshire and Sussex coasts (particularly the latter), they arrive as early as March, and sometimes even in February; and the earlier in the season the fishermen go to look for them, the farther from the shore they are found. Duhamel says the mackerel are caught earlier in the year at Dunkirk than at Dieppe or Havre; upon our own eastern coast the fishery is later. The fishermen's harvest at Lowestoft and Yarmouth is during the months of May and June, when the mackerel are in such wonderful abundance that 15,000 are often taken in a single night. The mackerel spawns in June, and, ac-

cording to Block, five hundred and forty thousand ova have been found in a single female. It is a curious fact, that the mackerel which come to the London market from the shallow part of the coast off Worthing and its vicinity, mature and deposit their roe earlier on that flat sandy shore than those caught in the deep water off Brighton. The young mackerel, which are called "*shiners*," are from four to six inches long by the end of August. They are half-grown by November, when they retire to deep water, and are not met with any more that winter; but the adult fishes never wholly quit the Cornish coast; and it is common to see some taken with lines in every month of the year. Their principal food is probably the fry of other fish; and on many parts of the coast the mackerel follow towards the shore a small species of "*clupea*," which is known by the name of mackerel "*mint*" at Hastings, and "*brett*" on the Devon coast. This little fish is said by some to be the young of the sprat, by others the young of the pilchard: it is about an inch in length.

The mackerel, as feeders, are voracious in the extreme, and their growth is very rapid; the usual length is from fourteen to sixteen inches, and

their weight is about two pounds each; but they are said to attain the length of *twenty* inches, with an increased weight in proportion. It should be remembered, however, that the largest are not by any means the best for the table. As an article of food they are in great demand; and those taken in the months of May and June are generally considered to be far better in flavour than those taken either earlier in spring or in autumn. To be eaten in perfection, this fish should be very fresh; as it soon becomes unfit for food, some facilities in the way of sale have been afforded to the dealers in a commodity so perishable. Thus mackerel were first allowed to be cried through the streets of London on a Sunday in 1698, and the practice prevails to the present time. At our various fishing-towns on the coast the mackerel season is one of great bustle and activity.

At Yarmouth the mackerel fishery employs ninety boats, with a tonnage of upwards of 3000 tons and 870 men, and produces about £20,000 a year. The frequent departures and arrivals of boats in the season form a lively contrast to the more ordinary routine of other periods; the high price obtained for the early cargoes, and the large

return generally obtained from the enormous numbers of this fish sometimes captured in a single night, naturally gives a stimulus to great exertions. In May, 1807, the first Brighton boat-load of mackerel sold at Billingsgate for forty guineas per hundred, *i. e.* seven shillings each, if six score be reckoned to the hundred; the highest price ever known at that market. The next boat-load produced but thirteen guineas per hundred; mackerel were so plentiful at Dover in 1808, that they were sold sixty for a shilling. At Brighton, in June of the same year, the shoal was so great, that one of the boats had the meshes of her nets so completely occupied with them, that it was impossible to drag them in; the fish and nets therefore in the end sunk together. In May and June there is fine fishing for mackerel with hook and line on the Dover and Brighton coast.

In the 'Times' of May, 1863, under the head of "The Cornish Fisheries," it stated the boats employed in the mackerel fishery at St. Ives had been very successful, particularly those from the eastward, and the price had been high. One day upwards of 100,000 fish were landed, price 21s. per hundred, equal to £1050; on another day, 80,000

were landed and sold at 22s. per hundred, equal to £880. Subsequently 75,000 were taken, and three boats took 5000 each, price 20s. per hundred. So many mackerel landed in one week have scarcely ever been recollected by the "*oldest inhabitant.*"

Mackerel are usually fished for by whiffing *across* the tide either under sail, or by swift rowing; baiting with a sand eel, last, squid, or piece of pilchard.

THE CONGER.

Conger vulgaris, Cuvier.
Muræna conger, Linnæus.

I pass over the freshwater eel, as a description is unnecessary in this work, and at once come to the marine species, or conger. Well known on all our rocky shores, but especially on the Cornish coast, they are often caught off the rocky parts of the eastern coast, and sometimes at the mouth of the Thames in winter; they are usually caught with

bulters, and hand-lines, and one of the best baits is the sand launce or eel. The French fishermen are so well aware of their attractiveness that their boats cross over from Dieppe and other ports to Slapton and Torcross in Start Bay on the south coast of Devon, purposely to purchase the launce, some of the fishermen using fine meshed nets especially to catch and supply these bait to the foreigners; they sell it at from twenty pence to two shillings per bushel. Mr. Low says, "It is found very frequently round the Orkney Islands; some are caught at the fishermen's lines, but the otter is by far the most successful in killing congers. He brings them ashore, and eats but a very small part, leaving the rest for the next comer, and where his haunts are known, the country people are very careful every morning to search for the remains of his overnight's feast, and are seldom disappointed, usually finding cod, ling sometimes, but especially congers, which are oftener seen amongst the deep hollows of the rock than further at sea. Congers are caught at all distances from the shore, to six or eight miles from the land, but in all cases the bottom should be rocky if you wish to ensure success. The chief conger

fishery on the English coast is off Cornwall, where sometimes a boat and three men will bring ashore from five hundredweight to two tons, the produce of a single night's fishing, as the fish will not readily bite during the day, and even on moonlight nights it is more shy than when in the dark, except in deep water; the bait used in general by the Cornish fishermen is the pilchard, which is devoured with the utmost avidity by the conger and most other fish; the mackerel is also used cut into four pieces, and the cuttle-fish, or squid, is an excellent bait. The conger is popularly believed to be very indifferent food, and therefore is bought readily by the poor classes; but I, for my part, consider it one of the best fish that swims, when properly fried, stewed, or made into a *pie*;* a large quantity used in former times to be dried in a peculiar manner and exported to Spain, especially the Basque provinces, where the flesh when grated to powder was used to thicken and flavour soup. Congers spawn in December and January, and when full-grown attain an immense size, sometimes more

* Everything in Cornwall is made into a pie, hence the saying that the Devil was never seen in Cornwall, as he is afraid of being made into a pie and eaten.

than one hundred and twenty pounds in weight, ten or eleven feet in length, and eighteen inches to two feet in circumference; they are very savage indeed: I have known cases in which congers have attacked fishermen, and bitten them severely before they could be despatched. The most common manner of killing them is to break the end of the tail with a smart blow from a wooden mallet, and then to cut the spine through at the neck—congers are so voracious that they will devour their own species, they lie concealed in the rocks or mud until any unfortunate prey may pass, when it immediately rushes on it, and if too large to be devoured or overcome at once, it is said that the conger will coil itself round its victim, and thus detain it till its teeth can take effect.

THE BASS.

Labrax lupus, Cuvier.
Perca Lubrax, Linnæus.
Common Bass of others.

The bass, a marine perch, with two dorsal fins,

is abundant in the Mediterranean, and was well known to the Greeks, who named it Λαβραξ, and esteemed it highly. It was also well known to the Romans, who called it "*lupus*," on account of its voracity, and these terms Cuvier has united for its modern distinction. This fish is found along the whole line of the southern coast of England, in the British and St. George's Channel, and though less numerous farther north, has been noticed in Berwick Bay and the Frith of Forth. On the Irish coast the bass is taken along the line of the eastern shore from Waterford to Belfast Bay—this fish is sometimes taken of the weight of fifteen pounds, and one is said to have weighed twenty-eight pounds; but the general size is from twelve to eighteen inches in length, and then the fish is excellent food. The bass swim in shoals along the coast, depositing their spawn in summer, and generally near the mouths of rivers, up which they frequently pass to a considerable distance; they have been retained with success in Mr. Arnold's freshwater lake in Guernsey, and are said to gain much in flavour by the change. Their food consists generally of living prey, the sand launce and small crustaceous ani-

mals, particularly the "*oniscii,*" in pursuit o which it ventures among the rocks in the midst of a tempest, as at that time these insects are frequently washed from their hiding places; they are captured at sea by various means, and give most excellent sport to the amateur, especially when whiffing with pilchard gut for bait, or in the dusk of the evening with a fly made of white pigeon feathers, the boat being rowed very fast through the water, and some sixty yards of line out, the fly being near the surface of the water. Good sport can be had by fishing for them from the rocks when there is a little swell coming home, or else by anchoring the boat on the edge of a current during flood tide. In this way I have, during an evening, caught a dozen fine bass, weighing from five to twelve pounds each; the struggles of the fish to get away are of the most determined kind, they being nearly as strong as a salmon. At Ramsgate and on the Kentish coast the bass is called the sea dace. They can be taken also with salmon or trolling tackle from the rocks at harbour mouths in the autumn, either with flies or bait.

STRIPED RED MULLET, &c.

Mullus surmuletus, Linnæus, Cuvier, &c.

The characters which distinguish the two species of red mullet have been long known. One species, the well-known striped red mullet, is of frequent occurrence along the extended line of our southern coast from Cornwall to Sussex, but becomes more rare in proceeding from thence northward by the eastern coast, with some exceptions. The red mullet was well known to the ancients, and held in such estimation that one of large size seems to have been an object of particular admiration, and sometimes even of contention; a mullet of six pounds is recorded to have produced a sum equal to £18; one still larger, £64; and £240 were given for three of extraordinary size, caught on the day of some repast of great magnificence. The striped red mullet is the species which occasionally only attains to so enviable a size in the Mediterranean; the second species, which on our own coast is very rare, is much smaller, but more beautiful in colour, and is the species which, on that account, the

Romans exhibited in vases of glass to their friends and guests. At the present time the mullets of Provence and Toulon are in high estimation. The flesh is white, firm, of good flavour, and, being free from fat, is considered easy of digestion; the liver is the part of the fish in the greatest request. On our coast the striped red mullet seldom exceeds fourteen inches in length, and even this would be considered a fish of large size; the largest I have ever heard of was caught near Weymouth, some years since, and weighed three pounds six ounces. This fish has been considered migratory, but it appears in the shops of London fishmongers the whole year, but in greatest quantities in the summer, when their colours are most brilliant, and the fish is in the finest condition for food. These fish take a wide range through the water; great numbers are taken in mackerel nets near the surface during that season, whilst rowing from place to place, but the greatest quantity is caught in the trawl nets, which traverse the bottom and enclose these and other fish in a manner which will be found described under the head of "Apparatus used in Sea-Fishing." These fish are sometimes found in

great abundance, at other times they are very scarce; this is from their shifting their ground, where they remain until disturbed by accident or the industrious fisherman finds them in their new locality, which on the south coast of England is often some miles east or west of their previous positions. So abundant are these fish on the south coast occasionally, that in August, 1819, 5000 were taken in one night in Weymouth Bay. In some mackerel seasons the mullet is very abundant, in others you cannot find one. In the month of May, 1831, 10,000 were sent to the London markets in one week from Yarmouth. The striped red mullet spawns in the spring, and the young are five inches in length by the end of October; they appear to select their food from amongst the soft crustaceous and molluscous animals, the cirri under the jaw evidently fitting them to feed very near the bottom. The plain red mullet is also occasionally taken on the coasts of Devon and Cornwall, but is very rare. Large quantities are caught in Start Bay, by trawling, and sent off by rail to London and other inland towns, the fishermen being under contract with the fishmongers to send all the fish caught to them; and so honestly

is this contract kept that I have stood on the beach at Teignmouth and waited for the sean to come in, and then have been refused even a mackerel at double the current price.

THE GRAY MULLET.

Mugil cephalus, Linnæus.

This fish is a general favorite at table, and is very well known to most readers. Its habits are such as rarely to cause its being taken far out at sea; it generally prefers places where salt and fresh water meet, so as to make it brackish, places near docks and wharves, and about the creeks in and at the mouths of large rivers and estuaries, where they are found in immense shoals; they generally swim in a circle near the bottom, in about a fathom of water, and will continue there for hours, some of them coming to the surface to suck in any animal or vegetable matter that may be floating there with the ebbing or flowing tide. They vary in size from the herring to the salmon;

I have often caught them, with pilchard gut for bait (when fishing for bass), ten pounds in weight. They make a very bold fight for their liberty, and, from their lips being very delicate and sensitive, often break away by making a determined dash. In the spring of 1847 I saw a shoal of these fish surrounded by a sean, just at the mouth of a harbour on the Devonshire coast, and on weighing the take they were found to have been more than *fourteen tons* in dead weight, making a very good return to the poor fishermen, who at that time of the year are generally on short commons.

The gray mullet is found all round the coasts of Great Britain, and in Europe generally; many were taken in the harbour of Balaclava in 1854-55. It spawns about June. Fine fishing tackle must be used for these fish, much the same as for bass fishing; they also feed like pigs, by rooting in the sand and mud with their noses.

THE GURNARD, OR GURNET.

Trigla cuculus, Linnæus and Cuvier.
— *lineata,* Montague and others.
— *Gurnardus.*

There are several kinds of this fish, but the most commonly taken are the red and gray; the former are very plentiful on the coasts of Great Britain, but are not often found larger than twelve or fourteen inches in length. It feeds on crustaceous animals, spawns in May or June, and the young are taken amongst the rocks on the coast at the end of August. They are very good to eat, and are found in perfection in October and through the winter; they are generally caught by the trawl net in deep water, as they mostly swim at the bottom; they are very tenacious of life after being taken from the water. Very good sport is obtained by fishing for them with lines baited with a shining part of a sand-launce, but they will bite at any bait. I have had good sport fishing for them with hooks baited with the white part of fat pork cut in strips. It is found in the Canaries, Teneriffe, the Mediterranean, &c.

The various species of gurnards are chiefly obtained by trawling.

THE PIPER.

Trigla legra, Linnæus, Cuvier, &c.

The piper is at once distinguished from other species of British gurnards by the large size of the head, the greater extent of the nasal projections, &c., and the immense spread of its fins. This fish is well known in the Mediterranean, and is very common on the south coast of Devon, where they are frequently gaffed whilst swimming on the surface, sleeping in the sun, and also is taken on the spillers which are set about harvest time for the purpose of taking flat fish; it is two feet long, and weighs about three and a half pounds; its name is supposed to have been given it from the grunting noise which it makes when taken out of the water. Perhaps a little assisted by its rarity, its flesh has been considered superior

to that of the other gurnards; even Quin has borne testimony to the merits of the west-country piper. The gray gurnard is taken along the line of the southern coast, and up the eastern coast going northwards, on the coast of Scotland and at the Orkneys; it is found also in the Baltic and on the coast of Norway. A writer in the 'Magazine of Zoology and Botany' says, "The gray gurnard is very abundant on the western coasts of Scotland, and often delights to swim on the surface. We recollect observing the sports of shoals of this species when on an excursion to the Western Isles during a week of beautiful but too calm weather, for it was before steamboats plied. They were often discovered by their noise, a dull croak, or croon, whence most probably their provincial name of *crooner*, or by the ripple or plough of their nose on the surface of the calm sea; thus they would swim for a few yards, and then languidly sink for a foot or eighteen inches, display and stretch their lovely fins, and again rise to the top. Boats were out with hand lines; almost all were half full, the men having little to do but bait the hooks and pull up; we resorted to our guns, and killed sufficient for dinner from the deck of the vessel."

FATHER LASHER, LONG-SPINED COTTUS, LUCKY PROACH OF SCOTLAND, GORLUB OF DEVON.

Cottus bubalis.
— *Scorpius.*

This fish is easily recognised by the head being well armed with long spines, but it seldom measures more than from six to ten inches on our own coasts. The cottus is decidedly forbidding in appearance; yet in Greenland, where the fish attains a much larger size, it forms the principal food of the natives, and when made into soup is said to be pleasant as well as nutritive. During the greater part of the year it is taken all around our own coasts from Cornwall to the Orkneys, and is left by the tide in small ponds among the rocks; it is almost always taken by the men employed in catching prawns, when its lively motion is annoying from the danger of pricking the fingers when catching at its tail for the purpose of ejecting the interloper from the net; it is not eaten on our coasts, being looked upon as useless even for bait, although the Dutch prefer it to most others

in turbot fishing, from its living for a long time on the hook, and by its struggles to get free showing itself to the fish when on the feed.

THE COMMON SEA BREAM.

Pagellus centrodontus.
Sparus —

This fish is common in the Mediterranean, and is constantly caught on the French and English coasts of the English Channel, but particularly on the coasts of Sussex, Devon, and Cornwall. The young fish are known by the name of chads, and afford an abundance of sport during the summer and autumn evenings on the Devonshire coast to the inhabitants, who look forward to their appearance, and go out in boats in large parties to fish for them; the most successful bait is the pilchard entrails, which, when fishing for chad, are put into a small bag or an old stocking, and let down two or three fathoms in the water, to attract them,

when the occupants of the boat let down lines, each having two hooks on them, which are kept apart by a spreader from nine inches to a foot in length, and two fish at a time are frequently pulled in. All kinds of fish are caught when fishing for chads, but more especially mackerel, which are attracted by the oil which floats away from the stocking, and are caught with a light line, which is carried away some distance by the tide; the mackerel caught in this way are considered finer than when taken in a net, as these fish generally feed singly, and are much fatter than those which feed in shoals. The bream is most abundant in summer and autumn, but in winter it retreats altogether into deep water. The sea bream is said to be a solitary fish, as when they most abound the assemblage is formed for no other purpose than the pursuit of food; but I know of exceptions to this, for in the year 1847, one evening in August, I was rowing up the coast from Plymouth to Salcombe, and when off Stoke Point saw a vast shoal of these fish, apparently playing on the surface of the water, showing their round red backs as they tumbled over and over like the porpoise, the sun shining on them as they flashed out of

the water; they were supposed to have been on the feed, and were going along at a good pace. This fish is very good for the table. One way of cooking it is to stuff it with veal stuffing and then bake it, when I am sure any gourmand would be satisfied with so admirable a "bonne bouche." Another mode is to split it open, dry it in the sun, and sprinkle it with pepper and salt; when dry, either grill or fry it; or you may wipe it quite dry after cleaning, but without removing the scales; it should then be broiled, turning it often, and if the skin cracks flour it a little to keep the outer case entire; when on table, the whole skin and scales turn off without any difficulty, and the muscle beneath, saturated with its own natural juices, which the outside covering has retained, will be found of good flavour.

There are some other varieties of this fish, but the one mostly taken on our coasts is the "black sea bream." These fish take the baits commonly used, but feed much on marine vegetables, on which it becomes exceedingly fat; it enters harbours, and is to be caught with rod and line from rocks and pier heads; the finest are taken by sailing boats, towing long lines after them, at several

miles' distance from the land. The largest *black* sea bream ever known was twenty inches in length.

THE PILCHARD.

Clupea Pilchardus, or *Pilcardus*.
Also known as Gipsy Herring in Scotland.

This is at one and the same time one of the most delicate and valuable of the finny tribe. It is never seen in the Northern Ocean, but is sometimes taken on the coasts of France and Spain. The chief fishing stations for pilchards are on the Devon and Cornish coasts and the south-west of Ireland, where they are usually found through the year, but even here their habits differ very much in each month and season. In January they keep near the bottom, being found in the stomachs of numerous ground fish. In March they sometimes assemble in shoals, and thousands of hogsheads are sometimes taken in seans, but it is not until July that they regularly congregate

so as to be sought after by the fishermen. The scan fishing commences in August, and sometimes continues to the end of the year.

They feed with voracity on small crustaceous animals, and their stomachs have been found crammed with thousands of a minute species of shrimp, not larger than a flea. It is probably when in search of some such food that fishermen say they have seen them lying in myriads quietly at the bottom, examining with their mouths the sand and small stones in shallow water. The pilchard has been known to swallow a hook baited with a worm, and it is probable that they devour the roes of fish. Vast quantities are taken with drift nets similar to those used in the herring fishery, and are shot at distances from the land varying from half a mile to five miles or more. These fish are cured and sent to the Mediterranean by thousands of barrels each year, forming a very profitable branch of the fisheries of the kingdom. Fine floating luggers are the sort of boats used in this fishery; they are usually from ten to sixteen tons each.*

* It was one of these same luggers which a year or two since was navigated to Australia by the hardy fishermen, and

Borlase speaks of a catch amounting to three thousand hogsheads, and as two thousand five hundred fish make a hogshead, there must have been the vast number of 75,000,000 fish taken in one catch.

In the year 1847 I was coming in from seawards one morning in September, off Plymouth Sound, when I heard a great blowing of horns (a custom very general amongst fishermen when catching pilchards), and on drawing near we found a boat whose nets were completely choked with pilchards, a fish being in every mesh; the weight was so great that the men could not draw in the nets and had hoisted one to the mast-head. Just as we came near the sun rose up out of the sea, and as the boat rolled to and fro the fish looked like a piece of scale armour, every scale showing a different tint, from emerald, red, blue, and green, with all the intermediate tints of the rainbow. Such a gorgeous sight is not often seen, and should have had a Byron there to have com-

made so rapid a voyage that they were employed to take the mails from the Cape to Melbourne, arriving before the mail packet, although only sixteen tons.

memorated it in a poem of the sea and its wonders.

Both the pilchard and its entrails are very valuable for bait, all kinds of fish feeding on them very readily.

THE HERRING.

Clupea Harengus of all naturalists.

According to Pennant's account, "this mighty army begins to put itself in motion in the spring. We distinguish this vast body by that name, for the word herring is derived from the German '*heer*,' an army, to express their numbers.

"They begin to appear off the Shetland Islands in April and May.* This is the first check the army meets with in its march southward. Here it is divided into two parts, one wing of those destined to visit our coasts takes to the east, the other to the western shores of Great Britain, and fill every bay and creek

* Pennant, in another part of his account, says the herrings continue on the Welsh coast till February (p. 447).

with their numbers. Others proceed towards Yarmouth, the great and ancient mart of herrings; they then pass through the British Channel, and after that in a manner disappear. Those which take to the west, after offering themselves to the Hebrides, where the great stationary fishery is, proceed towards the north of Ireland, where they meet with a second interruption and are obliged to make a second division; the one takes to the western side and is scarcely perceived, being soon lost in the immensity of the Atlantic, but the other, which passes into the Irish sea, rejoices and feeds the inhabitants of most of the coasts that border on it.

These brigades, as we may call them, which are thus separated from the greater columns, are often capricious in their motions, and do not show an invariable attachment to their haunts. Pennant may have thought himself quite correct in his account of their migration, but I have never been able to find from any authority that they *abound* in any part of the Arctic Ocean. There is no fishery of importance for them in Iceland or Greenland, nor have the many Arctic voyagers noticed them in particular.

The herring spawns at the end of October or beginning of November, and it is two or three months prior to this, when they assemble in vast numbers, that the fishing is carried on, which has become of such great commercial and national importance. Through the guidance of a bountiful Creator the fish are guided to the shores so that man can take them when in the greatest perfection for human food.

Herrings are fished for in the same manner as the mackerel or pilchard, with drift nets, the mesh only being different in size. In the wild sports of the west a visit to the herring fishery is thus described:—"Having lighted our pipes and procured our boat cloaks, we left the pier-head in the four-oared galley. The night was unusually dark and warm, not a breath of wind was on the water; the noise of the oars, springing in the coppered rullocks, was heard for a mile off, and the whistle of sand-pipers and curlews as they took wing from the beach we skirted appeared unusually shrill. Other noises gradually broke the stillness of the night. The varied hum of numerous voices chanting the melodious but melancholy songs which are the special favorites

of the Irish, began to be heard distinctly, and we soon bore down upon the midnight fishers, directed by sound, not sight. To approach the fleet was a task of some difficulty. The nets extended in interminable lines, were so frequent that much skill was necessary to penetrate this hempen labyrinth, without fouling the back ropes, warning cries directed our course, and with some delay we threaded the crowded surface, and, guided by buoys, found ourselves in the very centre of the flotilla. It was an interesting scene: momently the boats glided along the back ropes, which were supported at short intervals by corks, and at a greater by inflated dog-skins, and, raising the curtain of net-work which these suspended, the herrings were removed from the meshes and deposited in the boats. Some of the nets were particularly fortunate, obliging their proprietors to frequently relieve them of the fish, while others, though apparently stretched within a few yards, and consequently in the immediate run of the herrings, were favoured but with a few stragglers, and the unemployed fisherman had to occupy himself with a sorrowful ditty or in moody silence watched the dark sea like some dull ghost waiting

on Styx for waftage. Our visit appeared highly satisfactory, every boat tossed us herrings on board, until we were obliged to refuse further largess; and these many 'trifles of fish' accumulated so rapidly that we eventually declined receiving other compliments, or we might have loaded the gig gunwale deep. The darkness of the night increased the scaly brilliancy which the phosphoric properties of these beautiful fish produce. The bottom of the boat, now covered with herrings, glowed with a living light which the imagination could not create and the pencil never imitate. The shades of gold and silvery gems were rich beyond description, and, much as I had heard of phosphoric splendour before, every idea I had formed fell infinitely short of its reality. The same care with which we entered disembarrassed us of the midnight fishery. Every boat we passed pressed hard to throw in a cast of *skuddawns* (herrings) for the strange gentleman, and such was the kindness of these hospitable creatures, that, had I been a very Behemoth, I should have this night feasted to satiety on their bounty.

"The wind, which had been asleep, began now

to sigh over the surface, and, before we had cleared the outer back ropes, the sea breeze came curling the midnight wave. The tide was flowing fast, and, having stepped the mast, we spread our large lug, and the light galley slipped speedily ashore."

Red herrings are prepared by salting and soaking in brine for several days, and then drying in rooms heated by wood fires. *Bloaters* are herrings only slightly cured. The annual supply of herrings at Billingsgate Market is estimated at upwards of 120,000 tons, valued at about £1,200,000 sterling. A barrel contains 550 fish, and is worth £1 12*s*. At Yarmouth alone the annual consumption of salt used in curing herrings amounts to 10,000 tons.

There is a curious custom at Yarmouth, by which the town is bound to send to the sheriffs of Norwich a hundred herrings, which are to be baked in twenty-four pies or pasties, and thence delivered to the lord of the manor of East Carleton, who is to convey them to the king. They are still sent to the clerk of the kitchen at St. James's. In 1778 the sheriff of Norwich attended with them in person and claimed the fol-

lowing allowance in return, viz. six white loaves, six dishes of meat (out of the king's kitchen), one flagon of wine, one flagon of beer, one truss of hay, one bushel of oats, one pricket of wax, six tallow candles. But no precedent appearing of these things having been delivered, they were refused.—*Records of the Board of Green Cloth.*

A last of green herrings is 13,200 fish.

THE SPRAT.

Clupea Sprattus, Linnæus and others.

The sprat, although not so important a fish as either the pilchard or herring, is a most useful one, as in the winter it is the source of sustenance to thousands of poor people. It is sent to the market in immense quantities, and at a cheap rate, just as the herring season closes. Great quantities are eaten, and as they are of good flavour they are much consumed by all classes. The modes of cooking them are various, and they

are prepared for use and exportation by salting, smoking, &c.

The salmon seems to be very partial to the sprat, always cultivating his acquaintance when possible, as he furnishes many a good meal whilst in the sea. The sprat seems to be chiefly on the shores of Norfolk, Suffolk, Essex, and Kent. Sprat fishing commences in November and lasts through the winter season. The best time for fishing is during dark nights with plenty of fog. The sprat is caught sometimes with drift nets similar to those used for taking mackerel, pilchards, and herrings, but by far the most successful plan pursued is that known by the name of "Stow Boat fishing," for account of which see article "Apparatus." With this method almost incalculable quantities of sprats and the small fry of other species of fish are taken, and, sad to say, are sold to farmers on the coast for manuring the land. This fishery gives employment to between four and five hundred boats during the season. About forty bushels per acre is the quantity usually put on the land, at from sixpence to eightpence per bushel. Thousands of tons are sometimes thus used during good seasons. In 1829-30

they were so plentiful that barges containing from one thousand to fifteen hundred bushels each, at sixpence per bushel, were sent up the Medway for the hop grounds.

THE COMMON COD, OR KEELING.

Morrhua vulgaris, Cuvier and others.
Gadus morrhua, Jenyns.

It seems to have been a provision of the Creator that this splendid and most useful fish should be distributed over the seas of the northern hemisphere, from Iceland to Gibraltar, in positions easily reached by the industrious and bold fishermen of the European coast, but it is not found in the Mediterranean. As an article of food the cod is perhaps the most important of all fish brought to our markets, and, as is well known, a vast fishery is carried on off the coast of Newfoundland, in which a very large amount of capital is invested. The cod is taken all round the coasts of this country, amongst the islands of Scotland, and in all parts of the Irish seaboard.

It is the means of employing many thousands of the inhabitants in the catching, curing, &c., and as an article of food is of the utmost value. These fish inhabit deep water of from twenty to fifty fathoms in depth, and, as they are very voracious, the fishermen can luckily catch them with almost any bait. They usually feed near the ground on small fish, crustacea, and testacea, and are generally captured with hook and line, two kinds of which are used for different modes of fishing. One way is by using a line with two hooks on it, which is lowered over from the boat and held in the hand till a bite is felt, when it is pulled in, the fish taken off, and the bait being readjusted, is again lowered overboard; the other plan is by means of a bulter or bultoe, the same as is usually employed in catching the conger, ray, ling, &c.; the bait generally used is the sand launce, limpet, whelk, or pieces of fish, their natural food is small fish, worms, and various species of crustacea and mollusca.

On the coast of Newfoundland, where the fish are very plentiful, as many as 400 and 500 are occasionally taken in a single day's fishing by one man. The cod is in its highest perfection during

the months of October, November, and December; it spawns in February, and is wonderfully prolific—as many as 9,000,000 ova have been found in the roe of one female. All the family of Gadidæ are in the best condition for table during the cold season of the year; the young ones abound at the mouth of the Thames and Medway during the whole summer—they are then about six inches in length; but as autumn advances, they gain both in size and strength, and are caught with hand-lines near the many sandbanks in the Channel; they are called when of the size of whiting, codlings, and skinners, and when larger, tumbling or tamling cod. They are usually from twenty to forty pounds in weight, more or less; there are two causes of wonder regarding this fish, *i. e.*, their periodical and distant migrations from shore to shore, and the incalculable myriads which compose their shoals. Before the discovery of Newfoundland, the principal fisheries for cod were on the coasts of Iceland and the Western Islands of Scotland. Four hundred years ago, the English resorted to the former country for these fish, and 150 vessels were employed in that traffic; but now far more

eligible spots are selected on or near the American continent, the chief being on the shores of Newfoundland, where the great bank four or five hundred miles long is the grand scene of the cod fishery, in which 15,000 British seamen are employed from the beginning of February to the end of April. As soon as the cod are landed the heads are cut off, and the bodies are opened, emptied, and salted; they are then stowed in the hold of the vessel, with a layer of salt to each layer of fish, and when they have remained there three or four days to drain, they are put in a fresh place and again salted. Cod are taken by the Norwegians in strong nets, of which they have occasionally 400 fathoms out at a time, which being laid in the afternoon and taken up the following morning, frequently bring their owners three or four hundred fine fish. In Lapland and other high latitudes the cold saves the trouble of salting; the cod are hung up in open buildings, and remain frozen and sweet till the succeeding spring, when they are cleansed and dried. All the domestic animals feed on these fish; horses in particular being very fond of them.

Cod-liver oil has of late years become a very

important article of commerce, having been patronised by the faculty as in a great measure a curative for the sad malady "Consumption," which annually carries off so many in this country. An account of the mode of preparation will be found in the first part of this work.

On the 10th of June, 1862, a letter appeared in the 'Times,' from F. R. Dawson, Esq., of Westray, in which he speaks of the vast amount of cod and other fish caught on the wonderful new fishing "in 140 fathoms of water. The fish caught were twice as large and more numerous than the Iceland cod-fish, and so numerous that the line was no sooner overboard than a fish was hooked. One boat, the 'Edy,' after being five or six days on the ground with a crew of three men and six apprentice boys, caught just eighteen tons of fish, and reported that some vessels were hauling in 1200 cod a day, some of the fish weighing upwards of twenty-eight pounds; sharks were also very numerous and large: another vessel, with only eight lines, caught 107 score of fish in three days. One great, and certainly just cause of complaint is, that the fishermen throw overboard the heads, bones, and intestines of the cod

which are taken; and as the garbage in all cases causes the fish to leave the spot, some idea of the injury done may be formed from the fact that every twenty fishermen throw over ten tons a week; if in place of suffering this, the Government stationed a cruiser there to compel the removal to land of the offal, they would be doing good in two directions, as they would preserve the fishing ground of Rockall untainted, and at the same time cause a supply (including the bodies of sharks) of 20,000 tons of manure, which could be collected and manufactured annually at a trifle of cost. The revenue to be derived therefrom would be £120,000; the price per ton of this *guano* £6 10*s*. 0*d*.; it is a much stronger manure than the original guano, and its beneficial effects are visible in the crops for three years after it has been laid on.

THE HADDOCK.

Morrhua æglefinus, Cuvier.
Gadus — Linnæus.

This most useful fish is quite as well known as the cod, and is very valuable from the vast quantity taken all around the coast, and the great ease with which it can be preserved. It is found on all the shores of Great Britain and Ireland, but it is never found either in the Baltic or Mediterranean. Haddocks swim in enormous shoals, but are uncertain as to their feeding grounds, changing very often. This may be accounted for by the voracity of the fish and their immense numbers, causing their food to fail them, and thus necessitate this frequent change in their haunts. Haddocks are found in the greatest numbers on the eastern coasts of England, from Norfolk to Northumberland, where they are taken with hand lines, the bait being pieces of herring or launce. They are continually caught in the trawl net on the southern coast, as they feed near the ground; they are usually from two to four pounds in weight, but

have been taken of from fourteen to sixteen. The haddock is celebrated in Scotland under the name of the "*Finnan,*" and in Ireland, as the "Dublin Bay" haddock.

The haddock spawns in February and March, and the young, early in September, are about six inches in length. They are called by the French "*Hadot,*" most likely a name derived from ours.

Vast quantities are caught on the coast of America, and as in this country furnish an immense amount of nutritious food for the inhabitants—in England they are salted and smoked, making a very nice addition to the breakfast table in that form, and all of us well know the annoyance they have given continually from the stentorian lungs of some "*fish chowder*" bawling "*Fine smoked haddick, haddick;*" &c., &c. The shoals of haddocks have been known to extend three miles in breadth and fifty miles in length. Haddocks bear on their sides a peculiar mark, superstitiously regarded as the impression of St. Peter's finger and thumb, and supposed to be perpetuated in order to identify the fish out of whose mouth the Apostle took the tribute money.

THE WHITING.

Merlangus vulgaris, Cuvier.
Gadus merlangus, Linnæus.

This delicious morsel is well known to surpass in delicacy all the other species of its very valuable family; the fine firm flesh, so beautifully white, and its lightness as an article of food, causes it to be much sought after for invalids as well as more general use. It is found all round the coasts of Great Britain and Ireland, from the Orkneys to Cape Clear. They are also very numerous on the coast of France.

Whiting are taken with lines all the year through, but in the greatest quantities in January and February, when they are in large shoals near the shore, for the purpose of spawning; they are found generally at from half a mile to three miles from the shore, and are caught in such abundance that, there not being a sufficient consumption for them fresh, they are preserved either by drying or salting. They are very greedy feeders, and eat the fry of other fish, worms, crustacea, and mollusca; sprats and pilchards have been found in the

whitings' stomachs; they frequent sandy banks, but frequently shift their feeding grounds. The general size of this fish is about a pound and a half, although they are often many pounds in weight; their shoals often extend miles in length. It may seem strange that these swarming and comparatively diminutive fish are usually caught with hooks and lines, but not with single ones: the lines are very long and have from 150 to 200 hooks each, in fact, spillers, and one vessel will set twenty of these bearing from three to four thousand hooks, and thus multitudes are taken with little trouble.

THE POLLACK.

Merlangius Pollachius, Cuvier.
Gadus — Linnæus.

The whiting pollack is found on all parts of the British coast, where they are caught quite close to the shore as well as in deep water amongst reefs and eddies. They are very greedy biters,

seizing the hook immediately they see it; they are usually fished for with hand lines by whiffing. They spawn in the winter close to the shore, and the young ones are in such abundance just on the edge of the tide on rocky ground, that many basketsful are often caught during an afternoon; they are usually small, but are very nice when fried like whiting: they can often be seen of a summer evening in full chase of the sand launce, making springs out of the water in their efforts to overtake them; they are from two to three feet long when full grown.

THE COALFISH.

Merlangus carbonarius, Cuvier.
Gadus — Linnæus.

The coalfish is usually considered to be a northern fish, but is also found well to the southward; it has been taken on the shores of Spitzbergen, and the young, four or five inches in length, have been taken in Davis's Strait in the trawl-nets.

It is found in abundance in the Baltic and northern seas, and is taken on the north coast of America; it is of great value as a means of support to the inhabitants of northern countries. Dr. Mill, during his tour in Shetland and the Orkneys, saw an old man and one or two boys on almost every projecting rock holding in each hand a fishing rod, and catching young coalfish as fast as they could bait their hooks and pull them in. The provincial names are almost numberless, some only applying to them when in certain stages of growth. In the Scotch Islands the coalfish is named piltock, harbin, sillock, cooth or kuth, cudden, seeth, sey, and gray lord; in some places they bear the name of podley, coalseys, and podlers. One peculiarity of these fish is, that they will, when attracted by bait, keep near a boat until all are caught. Four men in two boats (two in each) have taken with lines twenty-four hundredweight in a few hours; when they have spawned in the spring they are very indifferent as food for the rest of the summer. They seem gradually to come south, as the young appear in the Orkneys in May, in the Tyne in June, and on the Devonshire and Cornish coast in July.

The coalfish is very like the whiting pollack, being generally considered the same fish by fishermen. Fine sport with these fish can be obtained just under the Start Lighthouse in the current between the rocks, where in a few hours of a morning, just about daylight, some hundredweights can be taken, generally the very finest fish from so rapid a tide-way. Numbers are taken round the Isle of Wight in the autumn, and are known by the name of "whiting cole."

THE HAKE.

Merlucius vulgaris, Cuvier.
Gadus, — Linnæus.

This most valuable and excellent fish is found in all the northern seas of Europe and in the Mediterranean. With us it seems to abound chiefly on the Devonshire and Cornwall coasts, but is not so plentiful on the Scotch seaboard. In Ireland, however, especially the south-west, they are abundant, and the Bay of Kenmare was anciently

known as the Bay of Hakes. Off the coast of Waterford, on the Nymph bank, it is so plentiful that six men fishing with lines have been known to take a thousand in a single night. It is a fish gifted with an insatiable voracity, as its name "Merlucius," or "sea pike," implies. An immense amount are salted, dried, and exported annually to Spain: they are also caught in abundance on the coast of North America. The supply of this fish is much depended on by the poorer classes for a very good cheap food, the flesh being very white and firm. They seem to be particularly fond of the pilchard and herring, the shoals of which they continually haunt, preying on the outskirts. In fishing for them it is customary to use a conger hook, which has the line guarded for some distance up with fine brass wire, to prevent the strong sharp teeth of the hake from biting it in half.

THE LING.

Lota Molva, Cuvier.
Gadus — Linnæus.

The ling is so valuable a fish as to be hardly second to the cod and coalfish; vast quantities are caught all around our coast, especially Cornwall and the Scilly Isles. They are usually caught with hand-lines and bulters, and with the exception of a few that are eaten fresh, are split from head to tail, cleaned, salted in brine, washed and dried; but the demand is generally far less than the quantity cured, and the poor fishermen are but poorly paid for their toil. Spain is the chief consumer, and formerly ling was so very valuable an article of commerce, that an act of Parliament for regulating the price of ling, cod, &c., was passed at so early a time as the reign of Edward the Third. The roes, which are large, are either eaten or sold to fishermen to attract fish to their nets. Oil is also extracted from the livers. The principal fishing seasons are—in Zetland from May to August, and in Cornwall, January and February; they are found in deep water on rocky

ground at the same time as one is fishing for conger, and generally forms a portion of the night's capture. The ling is very prolific and of tremendous appetite, eating any living thing, not excepting its own young, swallowing its food whole. Thus they are very easily caught; they are very tenacious of life, as the following circumstance will show: "I once," says Mr. Crouch, "saw a ling that had swallowed the usual large hook, shaft foremost, of which the point had fixed in the stomach, and as the line drew it, it turned round, entered the opposite side of the stomach, and fastened the organ together in complicated folds; yet, having escaped by breaking the line, it survived to swallow another hook, and be taken some days after."

The ling is generally about four feet, but some are said to have been seen seven feet in length, and seventy pounds in weight.

THE TORSK, OR TUSK.

Brosenius vulgaris, Cuvier.
Gadus brosene, Penn.

This fish is hardly ever taken on our coasts except in the Orkney and Shetland Isles, where they swarm in such vast numbers as to be considered of much importance in the fish trade. They are dried and salted in the same manner as the ling, and it flakes well in the cooking, but is tough when eaten fresh. I will give the following account, abridged from Faber's history, of this fish, it being so little known in England: "A northern fish, scarcely occurring below 60° or above 73°; not migrating regularly, and therefore rarely seen by ichthyologists of the south." Plentiful on the coast of Norway as far as Finmark, of the Faröe Islands, and the west coast of Iceland.

It must be uncommon in Greenland, as Fabricius only knew it from the report of the natives; just touches the most northern point of Denmark, at Skagen in Jutland, where it is sometimes taken; not at all in the south. Approaches the land

early in the year in shoals; that of Iceland in January; remains there in company with the Fine Bearded, and goes away again in summer; lives in deep water, and is therefore seldom taken even when it is most abundant; prefers a rocky bottom on which seaweeds grow, never found anything in the stomach; and this has probably given rise to the saying "that it lives on the juice of seaweeds." Spawns early in April and May among the *fuci* along the sea coasts; is rarely taken with the cod-hooks, more frequently by the smaller lines; sometimes taken by the Norwegian fishermen among the Halibuts. It must have less power of resisting the violence of the sea than its congeners, as it is thrown up dead in incredible numbers on the coast of the Faröe Islands and the south coast of Iceland after a storm. Its flesh is hard, but well flavoured. In Iceland seldom dried, but eaten fresh. Jan. Olsen says, "that the flesh is badly tasted, but when dried it is the best food. In Norway it is treated like the stock-fish, but forms no branch of merchandise. The hard roe, according to Pontoppidan, has a good flavour; its enemies are the larger species of cod. It is much infested by a

worm which forms a *nidus* in its skin, and produces rounded swellings.

THE PLAICE.

Platessa vulgaris, Cuvier.
Pleuronectes platessa, Linnæus.

The flat-fish generally are most deservedly much sought for as articles of food; there are sixteen species known around our coasts, and they decrease the further to the north you go, until in Greenland the number of species are reduced to three. Plaice are generally found on sand-banks and mud-flats in the sea; on the coast of England they are taken in great abundance wherever the trawl-net, the tuck-net, or the spiller can be used. The plaice is in the best condition for food at the end of May, and spawns in February and March. They feed on worms, crustacea, and small fish; they are said to have been caught fifteen pounds in weight, but they are usually of three or four pounds. On some occasions they have been

taken in vast quantities; at one time such an immense glut occurred in Billingsgate, that, although crowded with dealers, hundreds of bushels remained unsold; fine fish averaging three pounds weight each were sold at one penny per dozen. One salesman having in vain tried to sell a hundred bushels at the rate of fifty plaice for fourpence, left them with Mr. Golding, the clerk of the market, requesting him to sell them for anything he could get; unable to dispose of them otherwise, Mr. Golding, by direction of the Lord Mayor, divided them among the poor. Spiller fishing for plaice on the south coast of England during the summer, more especially at harvest time, affords abundance of sport, and enables one to vary the supply of fish for the table, as almost all fish are caught by the spiller, but chiefly ground fish.

THE FLOUNDER.

Platessus flesus, Cuvier.
Pleuronectes flesus, Linnæus.

Is caught all around our coasts, being one of the most common of flat-fish, where the bottom is composed of soft sand, clay, mud, &c.; they are said to have been seen of four pounds in weight each, but I have never met with such monsters. The flounder feeds on small fish, worms, insects, crustacea, &c., and spawns in February and March; they abound in the Thames and in most freshwater rivers, where they are taken in tuck-nets, or by spillers; they make very nice food, being a delicate fish. There is another variety known as the *long* flounder. I have taken them in quantities when fishing from Southend Pier, baiting with a boiled shrimp; they are frequently caught in pairs, and when fresh are very nice for breakfast.

COMMON DAB.

Platessus Limanda, Cuvier.
Pleuronectes — Linnæus.

This delicious fish is found on all parts of our coasts in company with the plaice and flounder. Vast numbers are brought to the London market, being caught by the trawlers in seine nets and by spillers and hooking; the lug-worm is their favorite food, but they also eat small fish, crustacea, testacea. The spring is the best time of the year to eat them, when large numbers are sold in the Paris markets, being preferred to the plaice and flounder. There are some other species of this fish, but they need not be specified singly, the one description sufficing for our purpose; any sandy tract of ground a short distance from the coast is almost sure to produce the dab, and you may find a "dab ground" off every fishing village on the coast.

THE HALIBUT.

Hippoglossus vulgaris, Cuvier.
Pleuronectes Hippoglossus, Linnæus.

This coarse fish is one of the largest species of the Pleuronectidæ, and is generally taken in the northern fisheries by hooks and lines. They are eaten both in the fresh and dried state, for which purpose the flesh is cut into long slips, and hung in the air. A very great quantity of oil is obtained from them by the inhabitants of the Shetland and Orkney Isles, who fish for them in slack water, and in the eddies around the islands, out of the races of the tides.

Halibuts weighing five hundred pounds have been caught in the North Sea, and some of very large size are caught off our own coasts. One was caught off the Isle of Man in April, 1828, which was seven feet six long, three feet six broad, and weighing three hundred and twenty pounds: it was considered the largest ever seen in Edinburgh, where it was sent; they feed close to the ground, devouring crustacea and small flat-fish.

They are generally sold by the pound at a low price; the flesh is dry though white and firm, but with hardly any flavour. The Jews are very fond of this fish, and consume nearly all that come to the London market.

THE TURBOT.

Rhombus maximus, Cuvier.
Pleuronectes — Linnæus.

This well-known and highly esteemed fish is justly considered one of the best as well as the largest of flat-fish, and notwithstanding the immense quantity consumed is still caught in great numbers. In the article "Fisheries," in the 'Encyclopædia Britannica,' the writer says, "The only fishery, perhaps, which neither the Scotch nor the English follow up with the same success as the Dutch, is that of the turbot; the finest of which are supposed to be taken upon the Flemish banks. The turbot fishing begins about the end of March, when the Dutch fishermen assemble a

few leagues to the south of Scheveling. As the warm weather approaches, the fish gradually advance to the northward, and during the months of April and May they are found in great shoals on the banks called the broad forties. Early in June they have proceeded to the banks which surround the small island of Heligoland, off the mouth of the Elbe, where the fishing continues to the middle of August, when it terminates for the year. The mode of taking turbot is as follows:—At the beginning of the season the trawl-net is used; which being drawn along the banks, bring up various kinds of flat-fish, as soles, plaice, thornbacks, and turbots; but when the warm weather has driven the fish into deeper water, and upon banks of a rougher surface, when trawling is no longer practicable, the fishermen have then recourse to their many hooked lines: the hooks are baited with the common smelt, and a small fish resembling an eel, called gorebill. Though very considerable quantities of this fish are now taken on various parts of our own coasts, from the Orkneys to the Land's End, yet a preference is given in the London market to those caught by the Dutch, who are said to have made £80,000

a year by the supply of the turbot alone, and the sauce for this luxury has caused the Danes to be paid about £15,000 per annum for a million of lobsters sent from the rocky coasts of Norway. One fourth of the supply of turbot to the London market is provided by Dutch fishermen: each boat brings from one hundred to one hundred and fifty fish, and pays a duty of £6, and a large trade is carried on between the Dutch and English fishermen at sea, the latter purchasing the fish and bringing them into our market free of duty.

On our southern coast turbot are caught by trawling vessels, and long line fishing at particular seasons, on the two extensive banks of sand known as the Varne and the Ridge, the first about seven miles, and the second twelve from Dover towards the French coast. The French also fish with long lines on those banks, and if unsuccessful in selling their turbot at sea, which they prefer, one or more of their boats is freighted with them and sent into Dover, paying the usual duty prior to selling the fish. They are not, however, allowed to sell any fish but turbot, except under particular circumstances. If in want of provisions, or their boat has suffered damage from bad weather, they

are permitted by certificate from a magistrate to sell as much fish as will procure them food or pay the cost of repairs. On the coast of Devon, where trawling on an extensive scale is practised, a part of the turbot and dory caught is sent to the London market, the rest going to Bath and Exeter during the season. Mr. Couch says, "The turbot keeps in sandy ground, and is a great wanderer, usually in companies; and though its proper habitation is close to the bottom, it sometimes mounts aloft, and I have known it upon the surface over a depth of thirty fathoms. I have been informed also of its pursuing to the surface a companion that was drawn up by the line, when both were taken together." Though a voracious fish, the turbot is rather particular respecting the quality of its food, for if in any way tainted it will not touch it. The best bait are small fish, either very tenacious of life or bright of colour, the atherine, and the two common species of the genus *cottus*. The sea scorpion, and father lasher, are most frequently used: the first attracts by its shining silvery appearance, and the other by living a long time on the hook, and being plainly seen by the turbot in their struggles to

get free. The fresh-water lamprey is also a favourite bait, vast quantities being used by the Dutch, principally on account of the ease with which they can be kept alive on board the boats at sea and their silvery colour.

The turbot generally feeds on small fish, crustacea, and mollusca. They spawn in August and rapidly recover their condition and firmness. Turbot have been taken seventy pounds weight each; recently the number of turbot brought to the Billingsgate market was 90,000 in one year, and the sauce from them caused the consumption of 2,000,000 lobsters.

The fisheries on the Varne and the Ridge, two sandbanks off Dover, commence in the spring with both line and trawl-net. The Varne lies east-north-east and west-south-west, about six miles in length, and one and a quarter mile in breadth, having two and a half fathoms of water on its shoalest part, with thirteen fathoms close to it.

The Ridge lies nearly north-east by east, and south-west by west, nine miles in length, and two miles in breadth, at the back of the Varne, and has on it from nine feet to four fathoms; this

bank, like the Varne, is composed of sand and shells, and the fish generally taken throughout the spring of the year are, turbot, brills, and soles; summer, mackerel, plaice, and bream; autumn, cod and whiting; winter, herrings, sprats, and oysters. On these banks the spring tides run two and three quarter knots, and the neap one and a quarter.

THE BRILL, OR PEARL.

Rhombus vulgaris, Cuvier.
Pleuronectes rhombus, Linnæus.

The brill is exceedingly well known, and brought in great abundance to the London market; they are caught on the same ground and in the same manner as the turbot, and also when fishing with the bulter for conger, and are very good eating. It is the broadest species of the genus after the *maximus*, and was the largest flat-fish taken in the time of Domitian. It is a very voracious

fish, greedily seizing on any animal that may come within its reach. The brill is caught in the European seas, and on our own coast from the Straits of Dover to the west coast of Ireland principally; nearly every fishing vessel comes in with a few brills, taken at all seasons, but usually from the fisheries on sandy bottoms, where they seem to obtain the most plentiful supply of food.

THE SOLE.

Solea vulgaris, Cuvier.
Pleuronectes solea, Linnæus.

The sole (of which there are several species inhabits the sandy shores all around our coasts from the Orkneys to the Land's End, and round the south coast and back by the North Sea; they keep close to the bottom, and feed on small testaceous animals and the spawn and fry of other fish; those of the south and west coasts are larger and superior to those of the north and east.

They are caught almost wholly by trawling, and are found from the Baltic to the Mediterranean. The chief trawling-ground is off the south coast, from Sussex to Devon; they are also taken off Ireland, but the chief fishing station is Brixham in Torbay. The boats on this ground usually use trawling-nets from thirty to thirty-six feet in the beam, and can depend on procuring a constant supply. An enormous quantity is taken and sent to market in baskets packed with the small fish outside so as to protect the larger and more valuable ones. Within one year, eighty-six thousand bushels of soles have been sent to Billingsgate market. They are sometimes of very large size: one is said to have weighed nine pounds, measured twenty-six inches long, eleven and a half inches wide, and was very thick. The sole breeds in the River Arun nearly up to the town of Arundel; they bury themselves in the sand during the winter; and are caught in the Arun with a ten foot beam trawl during the season from May to November. The sole is usually found full of roe at the end of February, when they spawn and are for a few weeks soft and watery, but they soon recover and are as delicate food as ever.

There is a good ground of soft sand for trawling for soles about sixteen miles from Brighton towards the coast of France.

THE SAND EEL, AND LAUNCE.

The former is the ammodytes of Cuvier and Linnæus, and the latter the Ammodytes lancea; both species are found on the sandy shores of Devon, Dorset, Hants, and Sussex. The sand eel differs only in size from the former, and was formerly considered only a large specimen of the sand launce. They are exceedingly abundant on the coast, and from its silvery brilliancy is constantly sought for and used by fishermen as bait for their spillers and land lines, and as they bury themselves in the sand they are easily caught when wanted.

"Ammodytes," their generic term, refers to their being able to dig in the sand, where they are found buried five or six inches beneath the surface in soft places; the projecting under jaw, aided by

the muscular power of the fish and its long slender form, aid it in burrowing into the sand, where it lives until the tide returns; they feed on various marine worms and very small fish.

The launce is caught in vast quantities at Slapton Sands on the coast of Devon with a fine meshed seine* of small size, and on some occasions the catch is from six to ten bushels at a haul; on some parts of the coast they are in such request for food that they are sold by the score. May, August, and December have been named in turn as the month in which the adult fish spawn, but nothing definite can with certainty be stated, as the habit of this fish in that respect is but little known. The launce is generally taken for bait by raking the sand with a particular rake, a bent wire, or by turning back the sand with a spade. See articles "Baits" and "Apparatus."

* See article "Apparatus."

LONGNOSE, OR SEA PIKE.

Esox Belone, Linnæus.

This curious fish is found in the deep sea, but in the spring and summer migrates in shoals to shallower water for the purpose of spawning. It is usually caught when mackerel fishing, and gives good sport from the determined fight it makes; but one must be careful not to let it touch the clothes, as whenever it does, a streak of scales with a *very* offensive smell is left to the annoyance of the captor. This fish is seldom eaten, as the bones are dark green in colour, and the flesh is strong. The cod-fish and seal often prey on it; they are usually eighteen inches long, and have even reached four feet, but these are very rare sizes; it is long, slender, and narrow in shape, greenish blue on the sides and black. It is very voracious, and of a fine day may be constantly seen skipping along the surface of the water in pursuit of the launce or brett, with their curious long beak, very like the snipe's in proportion, and looking very odd, furnished with very strong teeth.

SMELT.

Atherina Hepsitus, Linnæus.

This is also called the sand smelt; it is very good eating, and is found in great abundance all round our coasts during the whole year, and is taken in thousands by fine meshed tuck nets; they also are very generally caught by children off quays and rocks with very fine line and hook baited with bits of pollack worm or pilchard gut; it is four or five inches long, semi-pellucid, the colour silvery, tinged with yellow, with a row of small black spots below the lateral line. The finest for eating are caught with hook and line, not being so much knocked about as when taken in the net. The ordinary smelt of the London market comes from Holland, and is known as the "*Dutch smelt.*" It is large and a more delicate fish, being so tender as to be easily injured unless carefully handled. These fish are remarkable for emitting a strong scent as if a fresh cucumber had been cut.

THE STURGEON.

There are two varieties of this singular fish: "Accipenser Sturio" of Linnæus and Cuvier, and the broad-nosed or "Accipenser Laterostris," both just the same in habits and of equal value as an article of food. It is caught occasionally on different parts of the coast, but mostly in estuaries or the embouchures of rivers; it is so seldom caught in the open sea that it is believed to live in water so deep as to be out of reach of nets, and it is never caught with lines. When caught in the river Thames within the lord mayor's jurisdiction, it is called a royal dish, from the old custom of reserving it exclusively for the English King Henry the First's table. They are sometimes caught of immense size, even as much as five hundred pounds weight each. There are vast fisheries in the north of Europe for this fish; the Russians especially are very celebrated for the caviare they make of the roe and isinglass from the air-bladder. The flesh when eaten fresh with rich gravies, &c., is thought to taste like veal; it is also pickled and salted in immense quantities.

This fish may sometimes be met with in fishing expeditions with tuck nets, where they do much damage to the nets in their attempts to escape.

THE SPOTTED DOG-FISH.

Scyllium Catulus, Cuvier.
Squalus Stellaris, Linnæus.

There are several varieties of the small and mischievous branch of the shark family. The only use of them is that, their skins being of different degrees of roughness, according to the species they may belong to, are much in demand for cabinet makers and turners, to polish and finish up their work with, more especially when working hard wood. They frequent the bottom, and greedily seize the baits of those who may be conger fishing; sometimes several dozen are brought ashore in the boats after a night's congering, and are usually left to decay on the seashore. The larger varieties of the family, the

blue and white shark, are also caught on the coast, often seizing the conger, ling, or cod, as it is pulled in by the fishermen, and at other times will wantonly bite the lines in half; they are not fit for food, their skin only is made into shagreen, and the livers melted for oil.

At Jersey during the summer of 1862 there was a great scarcity of all kinds of fish, from the fact of several large sharks having been cruising off the coast; they were most bold in the way, and let boats come near them, but were too cautious to be taken.

THE SHARP-NOSED RAY.

Raia oxyrhynchus and the skate are caught all round the coasts of Britain, but in the greatest abundance off the shores of Devon and Cornwall from the Start to the Land's End; some are of monstrous size, as much as eight feet in breadth, but such monsters are rare. They are exceed-

ingly voracious, eating any kind of fish, mollusc, or crustacea they can catch, and so very strong are their jaws, that they can crack to pieces the shell of a crab or lobster in a moment with the greatest ease. They produce their young at the end of spring and during the summer in curious horny cases very like those of the sharks. Children on the coast find the cases and call them purses; these fish are always best in season as food during the autumn and winter, when a very great quantity is consumed in London; crimped skate being a fashionable dish. The majority sent to market are taken by the trawlers in deep water, if fished for with lines, when hooked they show a most determined fight. A very amusing way of catching them is with a strong kind of spiller known by the name of the "Ray Spiller;" this baited with pieces of pilchard is sure to capture a great number during August, September, and October, if set of an evening, and pulled again after being down some hours.

CUTTLE FISH, OR SQUID.

Sepia octopus.
— *officinalis.*
— *media.*
— *loligo.*
— *Sepiola.*

Of this extraordinary animal there are no less than five varieties, but they are in general known by the inhabitants of the coast under the name of "*Squid.*" This fish or mollusc is in high repute, and much sought after as one of the best baits known on the coast for capturing the finest kinds of fish for the markets. They are very extraordinary in appearance, being of an opaque fleshy substance, with only one bone in the body, and that a thin, bright, and transparent one, like talc in appearance, and quite flat in form; they have eight arms, very long and set along the inside with watery suckers, with which they seize their prey and hold it, whilst they feed on it with their curious mouths formed of a horny substance just like a parrot's bill. They have a peculiar secretion, dark brown or black in colour, with which,

when pursued, they baffle their enemies by discharging this liquid and discolouring the water around them, so that they decamp without being observed by their pursuers.

In catching them for bait, two plans are adopted; one by the tuck net, the other by what is termed jigging (see article "Apparatus"), which is done as follows: having chosen a station for your boat in deep water, at dusk on a summer evening where a back tide is running, and let go your anchor, lower down a line with any small fish attached, such as a small pout, pollack, or blenny, and soon you will find the *squid* at work. You then gradually pull in the line, when generally a dozen or two of the sepia may be seen following up the bait; you must then gently place the jigger in the water under your prey, with the hooks a foot or so behind him, and raising it till you touch the *squid*, it will instantly dart back and impale itself on the hooks so considerately placed there for the especial purpose; you then of course haul your prize into the boat and lower the bait again for more of the family to have their supper.

Generally the operator puts on an apron or

covering made of canvas to protect himself from the black liquid sepia which the fish discharges the moment it is hooked, and which would cover him from head to foot were he not so protected. Two or three dozen are taken in this way of an evening, and are cut in pieces an inch or two in width and about six inches long for bait; congers are most particularly fond of it as food, wherefore fishermen are most anxious to procure *squid* when practicable for pursuing their conger fishing. One species of the sepia officinalis supplies the curious *cuttle bone* of the shops, which is used by silversmiths, and is sold as *pounce;* it is exceedingly light, and may be met with in great abundance on all parts of the south coast, generally washed up to high water-mark. The cuttle fish of the Indian Ocean is a most formidable enemy to the natives, as it grows to an enormous size, and sometimes seizes the boats of the fishermen, who carry axes for the special purposes of chopping off their tentaculæ, when they place them on the boats' gunwales.

PHOLAS, PIERCE-STONE, OR PIDDUCK.

The pholas (as their name derived from the Greek φωλευω imports) "*seek a hiding-place*" in all kinds of rocky fragments, and even in wood, piercing the substance while they are young, and gradually increasing the dimensions of their cell as they become larger by growth. At Salcombe, on the south coast of Devon, there is a bay which, when the spring tides ebb out, leaves a large space uncovered, composed wholly of decayed wood, evidently the remains of a forest overwhelmed in ages bygone; it is composed mostly of oak trees, but on digging into it you often find leaves of various kinds of trees, amongst others, the hazel, the twigs, and even the *nuts*, having been preserved by the sand covering everything with a thick coating, and so excluding the air. I have dug quantities of the pholas from this decayed wood when a boy, as they are much valued for bait, especially for spiller fishing, when they are known by the local name of "*Sculpens.*" Naturalists say there are five varieties of this curious animal.

SOLEN ENSIS, RAZOR-SHELL, OR SHEATH-SHELL.

There are nine varieties of this curious fish, which is much sought for both for food and bait. Their form is peculiar, being long and narrow, a little curved and open at the ends. The name solen is derived from σωλην, a tube; the Latin appellation *unguis* was probably given on account of the *snail-like* or horny substance and colour of many of the species. By the French the shells have been called "*Manches de Couteaux*," in allusion to their shape; they are found all along the coasts of Dorset, Devon, and Cornwall. These shell-fish bury themselves in the sand, and are discovered by a small dimple on the surface under which, on digging, the animal is found.

TELLEN, DOUBLE WEDGE-SHELL, OR SQUIN.

The tellinæ lie buried in the fine sandy mud of the sea-shore, and when the tide recedes they are easily found by two small apertures in the sand. They are taken in great quantities and consumed by the poor, making a good stew or pickle; they will do for bait, but are not much in request.

CARDIUM, COCKLE, OR HEARTSHELL.

The animals of this genus are found under the surface of the sand and mud all around the shores of Britain; they must have existed in most enormous quantities at the mouth of the Thames in former days, as the thousands of barges which come to London in a year are filled with sand com-

posed almost entirely of fragments of cockle shells. Cockles are consumed with great avidity by people in all parts of the country, and any one may well remember the old women's stalls and the oft-repeated cry of the owners who tickle the palates of their patrons with "*Cockles, cockles, pickled cockles, O; who'll buy?*" There are ten varieties of this very useful article of consumption, and although a variety of shells are as justly entitled to the appellation Κάρδια, or *heart*-like, as those which constitute the genus cardium, still the latter all possess this character, and are distinguished by their hinges. Cockles are taken by dredging, or else by hoeing, parties often being made up to go out and hoe for them; they are usually found just beneath the surface, a small hole in the sand or mud pointing out to the experienced eye the spot in which the cockle is to be dug for.

OSTREA MAXIMA, SCALLOP, OR ESCALLOPPE.

These very delicious shell-fish are much sought for in some places, being considered a "bonne-bouche" by those people who "*live to eat.*" The shells of these animals were formerly used by pilgrims as a badge, and were worn in their hat or on their cloak. In the Western Islands the shallow valves were anciently used at feasts for plates, and the hollow ones for drinking cups, to which use these last are still applied. They are in general caught by dredging in sandy ground where a sharp tide runs, and in greatest abundance just after a fall of snow, when an immense number of boats may be seen, with, in general, two men in each, dredging at a great rate; they often catch oysters, whelks, &c., at the same time, but the catches are very partial, some boats securing several dozen, and others only one or two. There are several varieties of this fish, some peculiar to foreign countries. One, which is small, is found on the Devonshire coast, and also Corn-

wall, where it is known by the name of the "*Brill*" (I fancy this is the "Astrea opercularis," or "fubrusus," of Tennant). It is about two inches and a quarter in length, and the shells are both somewhat convex; it makes a very nice dish when stewed, and is dredged for about four or five miles from the coast in deep water with a sandy bottom, where they are found in immense masses, termed locally "*banks*." Generally a trip to these banks is considered a holiday, there not being a sale sufficient to pay men to make it a regular branch of their pursuit. There are thirteen varieties of the Ostrea family.

OSTREA EDULIS, OR COMMON OYSTER.

This well known and much esteemed article of food is bred in vast numbers and quantities, and is of much importance as an article of trade.

The British oysters were famous even in the time of the Romans, and those of Richborough,

the ancient Rutupinum, were considered as the best. They grow in beds at the bottom of the sea, generally in bays, on a substance called *cultch*. On this they deposit their spawn, and when full grown, they are dredged up. They are in season, according to the vulgar account, in those months which have the letter R in their name; that is, from September to April inclusive. A green colour is artificially given to them in some places, but, as this is unnatural and a disease, the oysters are probably not so wholesome as those that are white.

A writer who signs herself "Anna Blackwell" in 'Once a Week' gives an account of "Pisciculture in France," and says, what the French style "the planting and cultivation of the sea," and the English, less ambitious in speech, would be content to call "the artificial raising of fish," is being carried on in France with a perseverance and zest which promise to yield very valuable results, and at no distant date. The various operations of modern pisciculture due to the inventive genius of the humble fisherman Rémy, and zealously promoted by the labours of the indefatigable M. Jacques Coste, under the joint

auspices of the Imperial Government and of the Society of Acclimation, are being rapidly reduced to a system at once easy of application and of almost certain success, and destined apparently to render the raising of fish as common as that of kine, sheep, wheat, and potatoes. Rivers, lakes, and ponds, exhausted by the improvident greed of fishermen and the destruction of the young fry, are being restocked from the great raising establishments founded in various departments, while the coasts of the Channel, the Atlantic, and the Mediterranean, and are being converted into oyster grounds, which threaten, if their tenants continue to multiply as rapidly as they are now doing, to ensure a surfeit of that dainty for the entire population of France. The fishermen of the Isle of Oleron have for many years past practised the artificial raising of the famous "green oysters," for which the shallows on the east coast of that island are renowned. They have covered a great extent of the shore with pieces of rock, to which the oyster spawn attaches itself in considerable quantities; these beds they call *viviers*, and from them, at low water, they gather the oysters, at a certain stage of their development, and transport them to

shallow pools, called *claires*, where they are fattened for the market. The *claires* are established on the banks of the Sendre, which, for the extent of several miles, have been divided into shallow flat ponds, by the erection of an infinity of low banks of earth about a yard high, and from five to six yards thick at their base, which are filled with sea-water by the tide. The industrious population of the region have created some 560 acres of these *claires*, and have devised methods peculiar to themselves for improving the oysters brought thither for "education," the latter soon increasing greatly in size, and acquiring with the peculiar green tint which gives them their distinguishing name a flavour which is highly appreciated by French "gourmets." But the first of the great "model oyster-farms" which, under the auspices of the government, are now beginning to yield such excellent results, was commenced by M. Coste, in 1857, in the bay of St. Briene. The water is there exceedingly deep, and the violence of the wind and weather added greatly to the difficulties of their novel attempt. But all these obstacles have been successfully overcome. The entire surface of the bottom of the

bay forming the pisciculturał farm is covered with fascines composed of branches of trees strongly lashed together, and held down by heavy stones; between these fascines the bed of the sea is paved with oyster and mussel shells, pieces of rock, tiles, and fragments of pottery destined to attract the spawn, and afford to the young oysters a surface suitable to their development. The success of the experiment at St. Briene has led to the foundation of similar "fish farms" at Arcachon, the Isle de Rê, and in the roadstead of Toulon, all of which are being cultivated with unremitting care, and promise, according to the reports of the periodical inspection to which they are subjected by the agents of the government and by those of the Society of Acclimation, to inaugurate a new era in the annals of fish markets, and to create a new and merchantable source of national wealth.

The last investigation into the state of the oyster beds of St. Briene, carried on by the members of the council general of the department, under the direction of the captains of the Chamois, Pluvier, and Eviel, of the French navy, placed by the government at the disposition

the commissioners charged to carry on the work of inspection, have given results that have far surpassed the most sanguine expectations of the advocates of the new system. Every time the drag was applied it brought up over 2000 oysters; and each of the three fascines of row number ten, sunk in 1859, and just brought up for examination, was found to contain 20,000 young oysters, from three to five centimètres in diameter. These fascines, exhibited in various towns in Brittany, created universal amazement, and will probably lead to the establishment of many new beds. They were subsequently taken to Paris for the emperor's inspection; and lastly were submitted to the Academy of Sciences, creating there the same feeling of admiration and astonishment which they had excited among the simple Breton peasants.

The fish farm of St. Briene shows what may be done in deep water and under the raging waves of the channel. The establishments in the shallow and sheltered Bay of Arcachon—almost a lake—show what may be done towards utilising shores of this description, where, at low water, the pisciculturists are as busy with their fish gar-

dens as a market gardener with his celery, asparagus, and wall fruit. Here the government, with a view to awaken the emulation of the spiritless and poverty-stricken people of a region prolific only of sand and dwarf pines, has founded two model fish farms, for the experimentation of apparatus and the perfecting of the methods of fixing the spawn and ensuring the easy gathering of the oyster harvest. The oyster beds are formed of fascines laid down in rows like the streets of a town, their interstices being paved with tiles, stones, &c. Over the rows of fascines are suspended moveable floors and collecting roofs of tiles, covered with putty (or cement?) stuck full of heart shells.

Beyond the region of fascines, floors, and roofs, all of which are covered so thickly with young oysters that it would be impossible to stick a pin between them, the floor of the bay is paved for a considerable distance with oyster shells and cardium, to receive the young fish. No fewer than one thousand oysters have repeatedly been counted on a single tile; and not only have the quiet waters of this curiously sheltered bay proved to be peculiarly favorable to the increase of the fish, but these are found to be,

for the form and cleanliness of their shells and their delicacy of flavour, superior to the oysters obtained amidst the storms of the northern coast. The initiation of the government has not been thrown away, a company comprising 120 capitalists and 1200 sailors and fishermen of the region, have formed a fish farm covering 400 hectars (2½ acres each) of the banks, which is prospering as brilliantly as are the government farms, and will suffice to raise all employed upon it to a position of ease and comfort. In the Ile de Ré, off the shore of Lower Charente, in the Bay of Biscay, several thousand fishermen and peasants have taken possession of a stretch of muddy shore, nearly four leagues long, between Point de Rimdoux, and Point de Lome, which they have transformed into an immense oyster field. These people have already 1500 oyster parks in full bearing; their example is being followed by others, and, ere long, the entire island bids fair to be encircled by a hill of oyster farms.

The establishment of these farms presented peculiar difficulties on account of the depth of the flooring of mud, which had to be cleared away before the oysters could be planted, and also of

the necessity of protecting the parks against the depredations of wild animals from the woods that cover the interior of the island. Having cleared away the mud, they paved the entire surface of the bottom with stones and pieces of rocks, as has been done on the sites of the oyster parks at Lolm and at La Rochelle. These serve both to divide the waters when the tide is ebbing, creating innumerable currents which draw away any muddy sediment, and to furnish an enormous extent of surface for the oysters, with which they are literally clothed, the inspectors having recently counted 600 full-grown oysters to the square mètre; and as 630,000 square mètres are now under cultivation, it follows that the oysters on this tract of desert mud, utterly wasted and worthless a couple of years ago, already boasts a crop of 378,000,000 of oysters, worth from six to eight millions of francs.* The material prosperity of the creators of this oyster field appears to have exercised a notably beneficial influence on their intelligence and morals. They have organised themselves into communities, hold a general assembly in which all details of the enter-

* £320,000 English money.

prise are discused and settled by vote; elect chiefs who direct the operations, and a body of "sworn guards" who keep watch and ward over the grounds, and superintend the gathering in of the common harvest; vote a tax which forms a fund to defray the working expenses of the concern; and elect delegates to represent their interest before the authorities of the Marine Department of the Government. All these measures seem to have been developed spontaneously, and by the mere force of things, among this humble but highly prosperous population. But the raising of oysters has not been confined solely to salt water and the shores of the ocean. Five hundred thousand oysters were carried over, in the summer of 1860, from the coast of England, in the Chamois, under the superintendence of M. Coste, and were immer ged in the pool of Than and in the harbour of Toulon. Though the oysters were fatigued and weakened by their long voyage, they seem to have thriven in their new homes, despite the different quality of the water, for a piece of the watling, laid down in lieu of fasciens, which has just been brought up for examination from the roads of Toulon, was found to be fully as rich

in infant oysters as the apparatus of the other oyster farms. The Society of Acclimation intend to establish farms on the shores of the Mediterranean, wherever their conformation appears to be favorable; as the oysters raised in that great inland sea are found to possess a specially delectable flavour, and are superior to all others in delicacy of texture, never becoming tough except when, through extreme old age, they attain a size which wins for them the contemptuous *soubriquet* of "horse-hoofs."

The Belgian and Danish Governments have been the earliest to interest themselves practically in the question of pisciculture; and have delegated—the first, a Professor of the University of Louvain, the second, a Professor of the University of Copenhagen, to study the details of the new science, under the auspices of M. Coste, with a view to its introduction among the fishing population of their respective shores.

The usual method of taking oysters is with the dredge which is used in deep water* and chiefly during cold weather, when various kinds of shell-fish are captured. We have to thank the dredge for Mr.

* See article "Apparatus."

C. Kingsley's interesting work "Glaucus," as when dredging for sea-weed, &c., he accumulated the information there imparted. I have often, when fishing or wild-fowl shooting, gone ashore at low water and made a good lunch on the fine oysters I have knocked off the rocks, where they are found in great quantities in some of the harbours and bays of our coast. I am very glad to see that a company is just started, under the able management of Mr. J. Mitchell, for the purpose of working Dr. Kemmerer's Patent for the collection and cultivation of oyster spawn or "spat." By using the Dr.'s invention tiles are substituted for the stone collectors, coated with a kind of mortar sufficiently tenacious to resist the action of the water, but soft enough to permit of the ready scaling off of the young oysters; these tiles can be used over and over again by coating them fresh with the mortar each time. The south coast of England is the most suited for breeding oysters.

MYTILUS EDULIS, OR MUSSEL.

The mytili either adhere to rocks by their byssus, or to the gagomæ by a sort of claws; or they penetrate calcareous rocks, where they reside without changing place; some of them which adhere to rocks near the shore are taken by fishermen either for bait or food, and men trained for the purpose in some places dive to the bottom of the deep sea in order to bring up such as produce pearls. Of these the ancient Romans were extravagantly fond. "It is enough," says Pliny, "to despoil the sea of its riches in order to gorge our appetites; we must, likewise, both men and women, carry them about on our hands, in our ears, upon our heads, and on our whole body. The word mytilus is, *perhaps,* derived from μιτος, a *thread,* or web; it is the most common shell on our shores, and is sometimes unsafe to eat; where it is found inconvenient, vinegar and oil are the remedies. In warm climates they grow to a large size. There are ten varieties of this genus, which is found in abundance in all parts of the known world. There is a very large consumption of these shell-fish

amongst the lower classes in England, many tons of them being annually sold in Billingsgate market.

PINNA NACRE.

The pinnæ sometimes grow to a large size, and are found standing erect in the sand or mud in deep water; they likewise fix themselves to the rocks by their byssus, and thus are not affected by the agitation of the waves.

To *πινν*α, a wing or *feather*, the shape is so nearly similar that we cannot doubt the derivation of the generic name.

BUCCINUM, OR WHELK.

The word Buccinum is derived from Βυχανη, a trumpet or *horn*, and was applied by Pliny to a certain class of shells with a round emarginated mouth. The genus to which it is now confined is perhaps less generally like a trumpet than many others. They are in general strong and hollow. The larger kinds were the first trumpets, by the sound of which the soldier was anciently summoned to arms. They adhere to rocks and stones, and deposit their ova in deep water. I have seen them taken in abundance in Margate harbour with a spiller baited with the small black crab crushed, the whelks adhering to the bait with sufficient firmness to be pulled into the boat; also at Southend pier they are taken with baskets which are let down to the bottom with bait in them, and after remaining there some time are pulled quickly up, when many whelks are found in them. They are sold in immense quantities at Billingsgate market, mostly for the purpose of being pickled in vinegar, after which they are retailed at cabstands with cockles to all comers of

the poorer classes, and I can assure my readers they are by no means despicable as an article of food when properly cooked. There are ten varieties of this family found on our coasts. I have no doubt if sought for by dredging an abundance would be taken. In oyster dredging at Spithead, and up Southampton water, from six to a score of whelks are taken at a haul.

HELIX, OR PERIWINKLE.

Animals of this genus are all either inhabitants of the land or water. The name ἕλιξ implies merely a shell constructed with a spire. The "*winkle*" is found in great abundance all round our seaboard, and is an especial favourite with the lower orders, being eaten at all their meals. They are collected from the rocks and bays, where they seem to lead much the same sort of life as their neighbours on land, feeding on various marine plants and small green mossy-looking

seaweed, with which some parts of the coast abound, the rocks looking quite a bright green with it; it is often a means of passing a merry day amongst the farmers' sons and daughters and villagers, who start in parties when the tide is going out, each with a basket, and all work with a will to try and fill his or her basket first; they then adjourn to their residence, and a great fuss takes place in cooking the produce of their day's work, a tea-party to eat these delicacies being the usual finish. Many hundred tons are sold each year in the market at Billingsgate to itinerant hawkers; they again retailing them in halfpenny-worths to the poor inhabitants of the back lanes and alleys. Vessels of twenty to fifty tons come every day to Billingsgate laden with nothing but these shell-fish. Vast quantities come from Norfolk and Scotland, and Ireland contributes its share; they are by no means to be despised as an article of food after being carefully extracted with a pin from their shells.

PATELLA, OR LIMPET.

The name of this animal is derived from the Greek word "πατελλα," "little dishes." The species of this genus adhere to the sea rocks near the shore, and are not without difficulty detached, except when taken by surprise; they are eatable and occasionally consumed by the poor inhabitants of the coast, but are hard and indigestible. Ten varieties are known in this country.

CANCER PAGURUS, OR COMMON CRAB.

There are no less than forty varieties of this animal, all of which are edible, but the C. pagurus is the one best known to commerce, vast quantities being consumed every year in this country. The whole of this family are taken in crab-pots generally made of wicker-work, but sometimes also of net and wire-work, which are sunk to the

bottom of the sea by stones firmly fixed to them. On the coast of Devon a certain bishop has pots of his own, and on one occasion a jolly parson of my acquaintance hauled the crab-pots of his diocesan, and extracted some of the contents, remarking, when he was remonstrated with, that there was no harm, as it was specially ordered that the "church should live by the church."

The "Cancer gammarus," or common *lobster*, is also well known as one of the most delicate of the genus for the table; they frequent the rocky shores, especially where there is clear, deep water. Lobsters breed in the summer months, depositing their eggs in the sand to the number of from 12 to 20,000. They change their shell or crust annually, and can renew their claws and feet, if, by accident, they are torn off. They dread thunder, and are apt to cast their claws on a loud clap. They are considered in season from October to May. In buying, they should always be chosen by their weight, the best being the heaviest; the shells on the sides should be hard enough to prevent yielding under moderate pressure. Incredible numbers are annually disposed of in the Billingsgate market alone for metro-

politan consumption, and four times as many in the provincial market. The chief supplies come from the English, Irish, French, and Norwegian coasts, and vast sums of money change hands on account of them. The Danes alone draw £15,000 per annum for the 1,000,000 lobsters they send to London, and about another 1,500,000 are sent from other sources.

In one fishing village alone two brothers have made an immense fortune by supplying the London market with crabs, lobsters, and crayfish, having commenced with one small vessel about twenty-five tons some thirty years since, and they are now in possession of about fifteen splendid vessels of all sizes, and have an excellent reputation for energy, honour, and integrity.

The crayfish (Cancer Astacus, Linn.) is a good deal like the lobster, being only a little larger and somewhat more coarse. It is not much eaten except by those who prefer quantity to quality.

PRAWN.

Cancer Suratus, Pennant.

The prawn is semi-transparent when caught, but is quite red after boiling. This delicate fish is taken in vast quantities on almost all the coasts of this country where there is a rocky bottom with sea-weed. They are caught in myriads in wicker-work pots, just like those used for capturing the lobster, crab, &c., with the exception of being smaller. Sometimes the demand is so much greater than the supply that 18s. per hundred has been given for them. The greatest quantity sent to London is taken from the sea round the Isle of Wight; but quantities are also taken in every harbour at low water by using the shrimp-net. They are, when fine, about the size of a finger, covered with a horny skin, and armed with long sharp spines on the head, which cut like a lancet.

THE SHRIMP

Cancer Crangon, Pennant.

Is found on all the sandy shores of Britain in great quantities, and in some places is taken in tons for the supply of the inland markets. Of late years they have been cooked on board the boats as the shrimping is going on, so that the moment the boats come in from the grounds, their takes are sent off by rail.

Contractors usually agree with the men for the take at a certain price, and they again sell them at a good profit to the fish salesmen in London, &c.

The village of Leigh in Essex is almost entirely kept going by the immense number of boats which pursue their calling on the sandbanks off the Essex and Kentish coasts at the embouchure of the Thames. These enticing little insects are grayish-brown when taken out of the water, and after being cooked are of a ruddy colour. They are somewhat like a miniature crayfish; before being landed they are passed through sieves, the smaller being thrown overboard, and this constant

supply has created a great demand from the immense numbers of flat-fish which frequent the locality to feed on this refuse.

THE BEST METHOD

OF

PRESERVING AND DRESSING

VARIOUS KINDS OF FISH.

CHAPTER IV.

THE BEST METHOD OF PRESERVING AND DRESSING VARIOUS KINDS OF FISH.

The whiting pollack should be boiled and sent up garnished with horse-radish and oyster sauce, or melted butter and anchovy sauce. When cooked in this way it is a good substitute for cod; also it is cut in slices about an inch thick and fried in butter. Another favourite way on board ship is to remove the head and backbone, split the fish, salt and pepper it and dry in the sun for some days; to cook it, either fry or grill.

The mackerel is cooked in many ways, the most general being to boil whole, and send to table with sauce of melted butter and chopped fennel and parsley; it is also treated in the same way as the pollack, but bears more pepper. If to be dried and kept some days, this plan of drying is

in almost universal use on the coast, the flavour when well fried being superior to that of most fish. Another plan is to salt them, and then brush them over with "Cambrian Essence," more generally known as the "Essence of Smoke;" this gives a far more delicate flavour than any other way of curing fish by smoking.

The conger eel, although not in great repute, requires only to be known to be appreciated; cut into pieces and fried it is more delicate than would be believed, the flesh being of the purest white, the head and bones and end of the tail stewed with parsley, some leaves of the white beet, and other herbs, make a delicious soup; also it is packed, in pieces of about six inches long, into casks, with layers of salt between and kept for winter use. In Devon and Cornwall a favourite mode of dressing it is to make it into pies, and a more savoury dish is not often set before one.

The hake, cut into slices an inch or more thick, is very good, and when stuffed with veal stuffing and baked is a great addition to the table; the

pieces that remain should be removed from the bones, mixed with potatoes, and formed into flat cakes, which when fried for breakfast will be found quite a delicacy.

Bream are also treated in the same way, but must be the largest that can be procured.

The mullet, both red and gray, should be fried in butter and sent up as hot as possible, the flavour being lost when the fish is cold.

The basse is best when split and dried in the sun, with a good quantity of pepper and salt, and when fried and eaten with butter is very good; sometimes they are boiled, but are not good so, as when sodden with water the flesh becomes short and woolly. It is sometimes cut into steaks and fried.

Whiting are both boiled and fried when fresh or after being split and dried, in which latter state they make a favourite addition to the breakfast table, but are never kept very long unless smoked in the same manner as haddocks.

Herrings are fried fresh, and when salted (the

head being removed) will keep for months; when, if required for use, should be soaked for some hours in water to remove the excess of salt; they are also smoked, when they become known by the names of the bloater and red herring, the former being the more delicate of the two.

The pilchard is treated in the same way (except smoking), and are preserved by the poor of Devon and Cornwall in thousands for winter consumption, being packed into casks in layers with salt between them. Vast quantities of these fish salted are sent to the countries bordering on the Mediterranean, where the inhabitants almost depend on them for their daily food.

The sand eel or launce is a delicate fish when taken in quite a fresh state and fried, care being taken to have them on table *very hot*. They are prepared to keep by having the heads cut off, and being put in salt for a day or two, then strung through the tail with a needle and thread, a dozen or two at a time, and hung over a line to dry. They are usually grilled of a delicate brown for breakfast and eaten with bread and butter.

The plaice, dab, flounder, sole, and fluke are in general fried in a fresh state; sometimes, however, they are hung in the wind and sun to dry, and then fried and eaten.

The ray or skate is usually hung to dry, and then either boiled or fried to suit the taste of the consumer.

Prawns and shrimps are always boiled, and allowed to get cold, as then their horny covering is easily removed.

HISTORY OF SEA-FISHERIES.

CHAPTER V.

HISTORY OF SEA-FISHERIES.

The capture of the many varieties of fish has given rise to a very important source of industry to the inhabitants of the coast of most maritime countries, and the places where regular periodical supplies are obtained are named "*fisheries.*"

Fisheries are localities frequented at certain seasons by shoals or great numbers of fish, sometimes of one particular description only, where they are taken upon a vast scale. The right of frequenting these fishing grounds has frequently been a matter of international dispute, and sometimes the subject of treaties, while exclusion from them or invasion of presumed exclusive rights to their enjoyments has often been the cause of warlike preparations. The principal kinds of fish which are the object of these systematic occupapations are, besides the leviathan of the deep,

cod, ling, turbot, conger, hake, herrings, lobsters, crabs, crayfish, mackerel, oysters, pilchards, salmon, anchovies, sardines, sturgeon, and tunny. With the exception of the four last-named descriptions, the fishermen of this country are engaged in the taking of all these fish, and pursue their calling to an extent which makes each section an important branch of national industry.

The quantity of other kinds of fish taken by the British fisherman is exceedingly great, and furnishes constant employment throughout the year to a great number of men on almost every part of the coasts of Great Britain and Ireland, but it has not been usual to apply the word "fisheries" otherwise than as already mentioned.

Of the British fisheries, some are carried on in rivers or their estuaries, and others in the bays or along the coasts. Our principal cod-fishing is on the banks of Newfoundland, and for whales our ships frequent the shores of Greenland, Davis's Straits, and the South Seas; also for many years past fine fishing grounds have been frequented on the coasts of the colonies of Australia and the Cape of Good Hope.

The taking of herrings was extensively pursued in Scotland in the ninth century, and continued until the convention of Royal Burghs prohibited the exportation of fish before the resident population was supplied at a stipulated price. In consequence of this interference many of the fishermen abandoned the pursuit at home and settled in Holland—a circumstance which first drew the attention of the Dutch to the value of the Scotch fisheries. Several enactments were passed in Scotland under James III, IV, and V, for the promotion of the fisheries, and James VI, before his accession to the English throne, directed the building of three towns for the same purpose, but this measure failed to secure success.

In 1633 Charles I ordained "An Association of the three kingdoms for a general fishery within the *hail* seas and coasts of His Majesty's said dominions." A standing committee was named for the government of the association, which was joined by many persons of distinction. For the encouragement of this adventure the king ordered that Lent should be strictly observed, but the breaking out of the civil war put an end to this scheme. In 1654 the Government, in order to

give protection to the fisheries, remitted in favour of Sir Phineas Andrews, who had embarked in the same, the salt duties and customs, and excise duties upon all naval necessaries, besides which voluntary collections were made from wealthy and patriotic individuals for building wharves, docks, and storehouses, and for defraying other expenses. These measures of "*protection*" appear to have been unsuccessful, for, six years later, we find that the fisheries were undertaken by Simon Smith, who, in addition to all the advantages conceded to Sir Phineas Andrews, was also allowed the free importation of all commodities imported in return for fish shipped to foreign countries. Charles II, on his restoration, appointed, in 1677, a "Council of Royal Fishery," to which the Duke of York, the Earl of Clarendon, and other persons of honour and wisdom, were named, with power to make laws for the management of the trade, and to punish any persons who should offend against their provisions.

For further encouragement a lottery was granted for three years, a collection was made in the churches, and an exemption granted for seven years from customs, both inwards and outwards,

on the sale of fish exported to the Baltic, Denmark, Norway, France, and some other countries. Besides this, all victuallers and coffee house keepers were *compelled* each to take a certain number of barrels of herrings yearly at 30s. per barrel, until a foreign market should be established to the satisfaction of the council. Beyond these *encouragements* a duty of 2s. 6d. per barrel was imposed upon foreign herrings imported, and a promise was made of "all such other advantages as experience should discover to be necessary." Great as were these encouragements, no progress was made in the fishery for sixteen years, at which time a charter was granted to a new fishing company which raised by subscriptions £11,580. This company, which was renewed in 1690, also failed, and was dissolved by Act of Parliament early in the reign of William III. Two further efforts made in 1720 and 1750 were alike unsuccessful. Various reasons have been assigned for these repeated failures; among these reasons may be mentioned the rule which made London the head-quarters of the fishery, it being the dearest port in the kingdom, and the superiority of the Dutch in the art. Andrew Yaring-

ton, in the second part of 'England's Improvements by Sea and Land,' sums up all other reasons in this one fact, "We fish intolerably dear, and the Dutch exceedingly cheap!"

In 1749 a Committee of the House of Commons was appointed to inquire concerning the herring and white fisheries, and as the result of its labours a corporation was formed with a capital of £500,000, under the name of "The Society of the Free British Fishing." A bounty of 36s. per ton on all decked vessels of from twenty to eighty tons employed in fishing was granted for fourteen years. This bounty was increased in 1757 to 56s. per ton, but without producing an adequate return to the adventurers, and in 1759, by the 33rd George II, a bounty of 80s. per ton was granted, besides 2s. 8d. per barrel, upon all fish exported, and interest at the rate of 3 per cent. was secured to the subscribers, payable out of the Customs revenue. The whole number of vessels returned on the Customs' House books for the fisheries in consequence of this act was only *eight*. In this year the whole busse fishing of Scotland, according to the statement of Adam Smith ('Wealth of Nations,' b. iv, c. v), brought in only

four barrels of "sea sticks" (herrings cured at sea), *each* of which, in bounties alone, cost the Government £113 15s., and each barrel of merchantable herrings cost £159 7s. 6d.! The explanation of this fact is, that the bounty being given to the vessels and not to the fish, *ships were equipped to catch the bounty* and not the herrings. By the 25th George III (1785—6) the tonnage bounty was reduced to 20s., and a bounty of 4s. per barrel was given on the fish, limiting the whole payment to 30s. per ton, except when more than three barrels per ton were taken, in which case 1s. per barrel was given on the excess. On an average of ten years 54,394 barrels were taken annually at a cost to the Government of about 7s. 6d. per barrel (equal to £20,397 15s.).

In 1786, "The British Society for extending the Fisheries and improving the Sea Coast of the Kingdom," was incorporated, and a joint stock was subscribed for purchasing land and building thereon free towns, villages, and fishing stations in the highlands and islands of Scotland. This joint stock was raised by the subscriptions of a few spirited individuals who did not look for any profitable return. The members of the society

were chiefly proprietors of estates, and their object was the improvement of their property. *No dividend* has *yet* been made upon the money expended by the corporation; but it is expected that the lands taken for the harbours, stores, and other buildings which they had constructed, may possibly yield a return in rent one of these odd days. Another act was passed in 1808 for the regulation of the fisheries. The bounty was again raised to 60s. per ton on decked vessels of not less than sixty tons burthen, with an additional bounty of 20s. per ton for the first thirty vessels entered in the first year. Premiums amounting to £30,000 were also given for boats of not less than fifteen tons burthen. This act prescribed regulations for fishing, curing, inspecting, and branding herrings, and a board of seven commissioners was appointed for administering the law. This act, which was at first passed for a limited time, was made perpetual in 1815 (55 Geo. III, c. 94). The tonnage bounty had in the mean time been extended to fishing vessels of not less than forty-five tons burthen. During the year 1814, only five vessels had been fitted out for the fishery from Yarmouth, and not one for the

deep-sea fishery from any other port of Great Britain. For the inspection and branding of herrings the whole coast of Great Britain was divided into districts; in each of these officers were appointed to oversee the operations of the fishermen, and to prevent fraud in regard to the bounty. The principal regulations affecting the curing of herrings were borrowed from the practice of the Dutch fishermen. In 1817, a further boon was granted to the fishermen by allowing them the use of salt, duty free, a peculiar advantage which ceased in 1832, by the repeal of the duty on that article.

The impolicy of granting bounties on production, the effect of which is to tax the people of this country in order that foreign countries may be supplied with articles of consumption at prices below their actual cost, came at length to be seen and acknowledged.

In 1821, the tonnage bounty of 60s. above mentioned was repealed; the bounty of 4s. per barrel, which was paid up to the 5th April, 1826, was thereafter reduced 1s. per barrel each succeeding year; so that in April, 1830, the bounty ceased altogether.

That this alteration of the system has not been productive of any serious evil to the herring fishery will appear from the reports of the Commissioners of the British Fisheries, wherein was stated the number of barrels cured, branded, and exported in each of the years ending the 5th of April 1815 to 1837. The average annual number of barrels of herrings cured and exported respectively in the five years that preceded the alterations, was 349,488 and 224,370.

In the five years from 1825 to 1830, while the bounty was proceeding to its annihilation, the average numbers were 336,896 cured, and 208,944 exported; and in the five years ending the 5th April, 1837, the average numbers were 396,910 barrels cured, and 222,848 exported.

The number of boats and fishermen and other persons employed in taking, gutting, curing, and packing cods and herrings in each of the six years to April, 1837, were as follows: average of six years, number of boats, 11,272; of fishermen, 49,441; of coopers and curers, 33,366; total number employed 82,807.

The impolicy of the bounty system has been placed in a very striking light by the evidence of

Mr. Fernan, of Liverpool, a factor for the sale of fish. The fishermen of that part of the coast are mostly inhabitants of a village on the coast called Skerries, where the houses are neater and in better repair now than during the time of the bounties, and the men themselves are better clothed, better fed, and more industrious and also more temperate than they were during the bounty. Nothing was more calculated to demoralise them than the bounties as they were given; nothing could have been more mischievous or more injudicious than the tonnage bounty system; it was, in fact, a bounty on idleness and perjury. Their increased prosperity arose from their astonishingly increased industry, and their greater reliance on their own exertions, without looking to extraneous aid. In Scotland, the fishermen have been able, from the profits of their business since the removal of the bounty, to replace the small boats they formerly used by new boats of larger dimensions, and to provide themselves with fishing material of superior value.

A Select Committee of the House of Commons was appointed in 1833 to inquire into the state of the *British Channel* Fisheries. A second Com-

mittee was appointed in 1836 to consider the state of the salmon fisheries of Scotland, and in the previous year commissioners had been instructed to investigate the condition of the said fisheries. From each of these bodies reports have proceeded which have been laid before the Houses of Parliament, and contain a considerable amount of information upon the subject.

Taking these branches of the inquiry in the order here given, I will proceed to describe as briefly as possible the actual condition of the fisheries connected with the coasts and rivers of the United Kingdom.

The appointment of the committee in 1833 arose out of the distress which was at that time said to affect the several Channel fisheries, and, in its reports, the committee stated that these fisheries were generally in a very depressed state and on the decline; that they appeared to have been gradually sinking since the peace of 1815; that the capital employed did not yield a profitable return; that the number of vessels and of the people to whom it gave employment was diminished; and that the fishermen who formerly could maintain themselves and their families by their

industry were in a greater or less degree pauperised. The cause of this unfavorable change, to which, as being in its opinion the most readily susceptible of remedy, the committee gave its principal attention, was the interference of the fishermen of France and Holland; but the principal cause of the distress was stated to be "*the great and increasing scarcity of all fish that breed in the Channel,*" *compared with what was the ordinary supply forty years since; operating prejudicially to the fisherman, at the same time that a continual fall of prices has taken place in the markets.* This fall of prices could not have occurred in consequence of any scarcity in the supply. That there was a diminished quantity taken by the English fishermen might possibly have been true; but considering that the supply in our markets was actually *increased,* so as to provide our growing population at progressively *decreasing prices,* I can only account for the facts adduced by the committee by supposing that the foreign fishermen, of whose interference such grievous complaint was made, were better skilled and more persevering in their calling than our own countrymen; a supposition which seems

to be borne out by the circumstances of our having, since this report was delivered, been still more abundantly supplied with fish for our tables; while the cry of distress on the part of the fishermen has passed away, doubtless owing to the greater degree of skill and industry which they have since exerted.

A complaint, the opposite to that brought forward by the committee, was pre erred against our fishermen by the owners of the boats, who alleged that, having advanced all the capital neeessary for the undertaking, and having probably also contributed to the support of the men during the dead season, under the faith of an agreement to receive at stipulated prices *all* the produce of their nets, the men so bound to them sold a considerable part of the fish which they had taken to boats dispatched from the coast of France.

These circumstances have been mentioned because a great and it is thought a groundless impression was created by the result of the inquiry of 1833, which inquiry, it has been alleged, was undertaken to satisfy the desires of certain interested parties, who wished to make out a case for the interference of government.

One branch of fishing wholly different in its objects from all the other branches has been described by the committee of 1833 under the title of the *Stow Boat Fishery*. This fishing prevailed principally upon the Kentish, Norfolk, and Essex coasts: was the catching of sprats, not for food, but as a manure for the land, for which there is always a constant demand. This branch of fishing was represented by the committee to have much increased, and to have given employment on the Kentish coast alone to from 400 to 500 boats, which remained upon the fishing grounds frequently for a week together, and until each had obtained a full cargo of dead fish. The facility which the pretence of employing these vessels in fishing gave the smugglers led to an Act of Parliament, 6 Geo. IV, c. 108, under which vessels and boats of certain descriptions required to be licensed by the commissioners of the customs. The licenses thus granted specified the limits beyond which vessels were not allowed to be employed: this distance was usually four leagues from the English coast; and it was affirmed that our fishermen were injured by this restriction, because some valuable fishing grounds laid beyond the

prescribed limits, and were thus abandoned to foreigners.

The *Pilchard fishery,* which is carried on upon parts of the Devon and Cornish coasts, is of very great importance. The number of boats engaged in it is about 1000, giving employment to about 3500 men at sea, and about 5000 men and women on shore. The pilchards visit our shores in August and September, and again in November or December; they come in large shoals into shallow water. As soon as caught they are salted or pickled, and exported to foreign markets; chiefly to the Mediterranean. The average exports amounted to 30,000 hogsheads per year. The quantity was much greater formerly, when a bounty of 8s. 6d. per hogshead was paid upon all exported. This bounty has long since ceased, and, as additional reasons for the diminution of the fishery, it is said that Lent is not now so strictly enforced as an ecclesiastical observance as it was formerly in the countries to which the exports are made, and that the heavy duty, equal to 18s. per hogshead, imposed upon importation into Naples, which has long been the principal market, has checked the consumption.

For many centuries the inhabitants of the Roman Catholic countries of the continent, and in various parts of the world, have depended upon the produce of the deep for their daily food, from the religion they profess enjoining so many fast-days in the course of the year, on which the eating of meat was forbidden and the consumption of fish permitted. Hence we may trace the cause of an immense commerce which gives wealth and occupation to thousands inhabiting the coasts of this and other countries, where the cod, ling, herring, pilchard, anchovy, sardine, mackerel, and other fish abound, and are captured by millions for the purpose of exportation and for home consumption.

The extent of the British *herring fishery* has already been noticed. The places where it is principally carried on are, Yarmouth, Lowestoft, Hastings, Folkestone, Clovelly, Cardigan Bay, and Swansea, in England and Wales, the coasts of Caithness, Sutherland, Aberdeenshire, Banffshire, Morayshire, and Ross-shire, in Scotland; and Galway, Killibegs, on the coast of Donegal, Mayo, the estuary of the Shannon, the coast between Dingle Bay and Kenmare, Bantry Bay, Water-

ford, and from Mizen Head, to Cahore Point on the Wicklow coast in Ireland. The following figures, taken from the report of the commissioners of the Irish fisheries, show the numbers of boats and men employed, and the produce of *cured* fish in each year from 1821 to 1829: average numbers of boats employed for 10 years, 10,970; average of men, 22,050. Barrels of herrings cured, 19,450; cwts. of cod, ling, hake, haddock, &c., 31,690.

The principal herring fishery off the coast of Norfolk and Suffolk commences in September, and ends in the beginning of December; mackerel fishing begins 1st May and ends 1st July. No material changes have occurred in the seasons, but herrings are more numerous of late years on the Yorkshire coast. For both fisheries decked vessels of thirty to sixty tons register are generally used.

Mackerel are fish of passage which visit every part of our coasts in the spring and early part of summer, and are taken in great abundance. In this country they are used fresh, and great quantities are conveyed by rapid land journeys from the coast to London. For the encouragement of the mackerel and other similar fisheries, the carriages in which the fish are thus conveyed were

exempted from the post-horse duty. The general desire to obtain this fish in perfection has led to the well-known relaxation of our laws against Sunday trading, which permits the open hawking about of mackerel on that day—a practice which is punishable with regard to any other fish, or indeed to articles of any kind, with the exception of milk. The fishing boats on those parts of the coast which are sufficiently near to the Thames were accompanied by fast-sailing cutters, which collected the takings of the fishing boats and proceeded to the Billingsgate market while the boats pursued their occupation; in some instances screw steam-vessels with wells in them have been used and found of very material benefit from the comparative certainty with which they could arrive in any stated port in time to send their cargo to the metropolis or any interior part of the country by specified trains. I find from inquiry that about one third of the fish consumed annually in London is brought to Billingsgate by land carriage,—of that quantity, about one third by Great Northern Railway, one third by Eastern Counties, and the remainder by South Eastern, South Western, North Western, Brighton, and other conveyances,

and the remaining two thirds of the whole consumption arrives by water up the Thames. Salmon comes by Great Northern, cod by water, mackerel by Brighton, herrings by Eastern Counties. During a favorable season, 100,000 mackerel are brought to Billingsgate market every week; those fish which are brought by land to London are sold at a kind of auction on the beach by the fishermen to dealers or owners of carts and vans to hawk about, their success in the speculation depending on being first in a market for consumption. The principal fisheries on the eastern coast of England are in the neighbourhood of Whitby, Hartlepool, and Robin Hood's Bay, and there is a great demand for these fish in the manufacturing districts.

The demand for fresh fish in the west of England is also very great. In the season of 1835 12,000,000 of pilchards were sold for home consumption, besides a large supply of mackerel, hake, &c., fresh or salted. The fish is distributed throughout the country in carts and on horses; pilchards are often sold at 1s. to 1s. 6d., and herrings at 2s. per 126; cod fish are from 1s. to 2s. each; red mullets 2d. to 6d. each; turbots 2d. to 6d. per pound; mackerel 2d. to 3d. each.

The different fishing grounds of Scotland and Ireland, and the kinds of fish found most abundantly, are as follows:

SCOTLAND.

Leith.—Herrings, cod, ling, haddock.

Burntisland.—Herrings.

Stonehaven.—Herrings, haddocks, halibuts, cod, ling, skate, mackerel.

Collierton.—Herrings, haddocks, cod, mussels.

Peterhead.—Herrings, cod, haddocks.

Port Gordon.—Herrings.

Findhorn.—Herrings, cod, haddocks.

Cromarty.—Herrings, lobsters.

Caithness.—Herrings.

Wick.—Herrings, cod, ling, hake, salmon, haddock, flounders.

Thurso.—Herrings.

Tongue.—Herrings.

Ullapool.—Herrings.

Loch Carron.—Herrings, cod, ling, hake.

Inverary.—Herrings, cod, ling, salmon.

Greenock.—Herrings, cod, ling.

Rothsay.—Herrings.

Campbleton.—Herrings, turbot, sole, flounders.

Orkneys.—Herrings, cod.

Shetland Isles.—Herrings, cod, ling.

Stornaway.—Herrings, cod, ling.

IRELAND.

Coast of Dublin.—Cod, haddock, whiting, herrings.

Louth.—Cod, haddock, conger, ling, mackerel, whiting, herrings, hake, and flat-fish.

Down.—Cod, haddock, ling, whiting, conger, turbot, soles, plaice, brill, mackerel, herrings, mullet.

Antrim.—Cod, ling, conger, pollack, flat-fish, turbot, haddock.

Donegal.—Soles, plaice, oysters, herrings, turbot, cod, ling, eels, haddock, dories, hake, whiting, conger, mackerel, sprat, glassen.

Sligo.—Turbot, cod, and all kinds of fish found on the Irish coast.

Mayo.—Turbot, sole, cod, ling, haddock, whiting, glassen, conger, gurnet, pollack, mackerel, herrings, skate, sprat, bream.

Galway.—Cod, ling, pollack, mackerel, bream,

herrings, conger, sunfish, haddock, gurnet, whiting, hake, turbot, glassen, soles, plaice, doree, halibut.

Clare.—Turbot, cod, ling, haddock, hake, soles, whiting, gurnet, mackerel, thornback, doree, ray, skate.

Kerry.—Turbot, haddock, gurnet, pollack, plaice, sole, doree, cod, whiting, ray, conger, mullet, mackerel, shad, bream, herrings, pilchards, hake, ling, glassen.

Cork.—Turbot, sole, cod, ling, haddock, mackerel, conger, hake, whiting, shad, pilchards, herrings, plaice, pollack, halibut, doree, skate.

Waterford.—Cod, ling, hake, haddock, glassen, herrings.

Wexford.—Cod, ling, hake, gurnet, whiting, pollack, turbot, mackerel, herrings, pilchards, lobsters, conger, bream, soles, plaice.

Wicklow.—Herrings, cod, oysters, ling, haddock, whiting, mackerel, soles, plaice, pollack.

Cod.—The cod fishery at Newfoundland was carried on as early as 1500 by the Portuguese, Biscayans, and French, but it was not until 1585 that the English ventured to interfere with them.

In that year Sir Francis Drake, being sent to the island with a squadron, seized the foreign ships which he found engaged in the fishery, and sent them to England, where they were declared lawful prizes. Seven years before that time attempts had been made to settle a colony upon Newfoundland under a charter granted by Queen Elizabeth, but without success. In 1610, a company was incorporated for the same purpose by King James I, and so successfully was the fishery prosecuted that in 1614 there were nearly 200 vessels engaged in it; in the following year the number exceeded 250. The author of 'Considerations on the Trade to Newfoundland,' inserted in the second volume of Churchill's 'Collections of Voyages,' tells us that, towards the end of the seventeenth century, the French were in the habit of employing in these fisheries about 500 sail of ships, a great many of which were of good burthen, and mounted from sixteen to forty guns, to man which they had by a moderate computation about 16,000 men.

This writer adds that "the French, by their extraordinary frugality, joined with their other great advantages, such as the cheapness of salt, and having the best and most convenient part of

the country for fishing, have quite beaten the English out of this trade, as may be instanced in many of the outports of our nation, and particularly Barnstaple and Bideford, which formerly employed in this trade above fifty ships, and now do not fit out above six or eight small ships.

By the treaty of Utrecht, which acknowledged the sovereignty of the whole island to be in the crown of England, the privilege of fishing on part of the coast was reserved to France, notwithstanding which the English fishery there increased to a great extent.

In 1763, there were taken and cured by the English at the fisheries of Newfoundland, 386,274 quintals or hundredweights of cod-fish, and 694 tierces of salmon, besides 1598 tons of fish oil. In that year there were 106 vessels employed in carrying on the fishery, 123 ships for conveying the fish when cured to England, and 142 ships for its conveyance to British colonies. The principal fisheries of Newfoundland are prosecuted on the banks which nearly surround that island. The object of these fisheries is solely cod-fish.

Salmon, mackerel, herrings, and some other kinds of fish are taken off the coasts of the island,

and the seal fishery is carried on successfully, yielding a considerable number of seal skins and a large quantity of seal oil for exportation.

The cod-fish cured and exported to England and to foreign countries in 1785 amounted to 591,276 quintals, and the subsequent success of this fishery will be seen from the following account of its produce exported in each of the three years from 1832 to 1834:

	1832.	1833.	1834.
Cod-fish, dry, quintals ...	619,177	883,536	763,187
„ wet, barrels ...	858	3,633	2
Herrings, boxes	86	—	—
„ barrels	1,728	3,039	1,823
Mackerel.....	477	326	202
Salmon	2,960	3,256	3,363
Seal skins, number	442,003	384,699	315,241
Train oil, gallons	2,522,508	2,860,888	2,297,618
Total value	£583,687	£699,174	£649,085

The total produce of the fisheries in these three years, exclusive of the oil, was valued as follows:

1832	£458,662
1833	594,429
1834	485,926

These fisheries may be said to be the sole pursuit of the settlers in Newfoundland, and of the traders who frequent the island. Nearly every family has a small piece of land under garden cultivation; but agriculture is not pursued as a substantive occupation.

In the other British North American colonies, with the exception of Upper Canada, fisheries are established, and the produce enters more or less into their foreign commerce.

The kinds of fish exported are chiefly cod, herrings, salmon, and mackerel. The actual value of these exports from each colony, in the three years 1832 to 1834, was as follows:

	1832.	1833.	1834.
Lower Canada	£6,475	£4,680	£6,492
New Brunswick	31,885	34,789	35,973
Nova Scotia	155,189	162,195	143,712
Prince Edward Island	65	11	89
Cape Breton.....	10,383	11,063	11,470
	£203,997	£213,638	£197,736

By the last returns up to 1861, published by the Board of Trade, the value of the exports from the fisheries of the British North American Colonies was—

From Canada	£133,439
New Brunswick	53,409
Nova Scotia	450,874
Prince Edward Island	15,231
Newfoundland	715,072
	£1,368,025
Fish and seal oil	284,796
Seal skins	56,292
	£1,709,013

In products of the fisheries alone the enormous sum of a million and three quarters sterling was earned by the inhabitants of these colonies by exporting the fruits of their industry. This is irrespective of what was consumed by themselves, both in the fresh and cured state.

In the same year they imported lines, nets, hooks, twine, &c., &c., of the value of £39,841, and employed in Nova Scotia alone (there being no returns of vessels and men engaged in fisheries of other colonies, and fish cured)—

Vessels.	Boats.	Men.	Barrels of fish cured.	Boxes of herrings smoked.
900	8,816	14,322	283,333	35,557

By comparing this last return with that of

1834, it will be seen how enormously the yield of the fisheries has increased, and of what importance they are as one of our many nurseries for hardy seamen to man our navy in any emergency; and also a large amount is received by the mother country for materials with which to prepare the various engines necessary to make the sea yield up her treasures.

In the Report of the Commissioner for the British Islands, ending Dec. 1859, the returns for the herring fishery of that year are as follows:— Cured 491,487½ barrels; branded 158,676 barrels; exported 272,979½ barrels; and of the exported there were sent to the continent 203,349½ barrels; to Ireland 68,882 barrels; and to the colonies 748 barrels: which, compared with the herring fishery of 1858, shows a decrease of 144,636¾ barrels in the quantity cured; of 74,698 barrels in the quantities branded; and 77,225 barrels in the quantity exported; and, likewise, upon an average of the three years of 1856, 1857, and 1858, shows a decrease of 117,488 barrels in the cured; of 66,439 barrels in the branded; and 82,012½ barrels in the exported.

The fishing of 1859 was, therefore, remarkably

short in its produce, a result arising from the deficiency at the stations on the east coast, for upon the west coast there was an average catch, and, as compared with the fishing of 1858, an increase of 9810 barrels in the quantity cured. The chief stations upon the east coast, however, fell very short, and they are those with which the trade on the continent is carried on. The effect has been greatly to diminish the quantity of herrings cured, and in no year since 1837 has the Board had to present so small a return of cure. In that year, with English stations included, the herrings cured amounted to only 397,829 barrels.

In these capricious fluctuations of the herring fishery are involved many questions for which no solution, nor anything approaching a solution, has yet been found. Many theories are advanced, some alarming, as to the decay of the herring fisheries; others inventive and fictitious, as to the supposed habits of the fish: but none that will stand the test of even the slightest investigation, much less the severity of scientific inquiry. On the subject itself science has thrown but little light, and whenever directed to it has found itself beset with serious and perplexing difficulties.

Science may therefore be said to occupy as yet but neutral ground, proving indeed by its deductions the fallacy of statements advanced with more confidence than reason, but unable to substitute facts and vouch them to be true with that authority which, in other branches of knowledge brought under modern investigation, have obtained for them the results and benefits of certainty. It is to be hoped that, in this age of progress, the time may not be far distant when a matter of such national importance as the herring fishery will not remain the sport of that blind conjecture which, catching hold of chance or local peculiarities, treats them, however dissimilar they may be, as the cause of fluctuations almost universal; and that instead of vague and fanciful views, the peculiarities of the fish may be determined, and their habits and migrations fully explained.

The year now reported on (1859) is the first application of the fee upon the brand established by Act 21 and 22 Vict. cap. 69. It may be said that the experiment has answered beyond expectation. So far as the limited experience of one season can be a test, the imposition of the fee has not affected the demand for the brand.

The quantity of herrings branded in 1859, on which the fee has been paid, though less from the bad fishing than the quantity branded in 1858, is, in proportion to the quantity cured, equal to the average brandings of the previous twelve years, when the brand was given gratis. It is obvious, therefore, that the change from a gratis to a paying system has not disturbed the ordinary current of business. This is all the more remarkable, as the payment of the fee is optional, and is not, as in other cases where a principle of payment has been suddenly introduced, compulsory. Whatever falling off there has been is attributable solely to the diminished supplies of fish. It will be easily understood that when the quantity cured is so short the demand upon it becomes so urgent that sales are promptly effected, and that this position of the supply being unequal to the demand, unbranded herrings have far greater facilities for being disposed of than they have in a plentiful fishing. Nor is this the only advantage derived by the unbranded out of such circumstances. The time and opportunity afforded to prepare the herrings carefully, arising out of the small quantity of fish delivered, enables

the quality of the unbranded to be raised nearer the quality of the branded, further facilitating their sale. There were thus brought into strong combination last season four points naturally antagonistic to the brand, viz. the novelty of a change of system, payment, a ready market, and leisure for curing. Nevertheless, nearly one third of the whole quantity of fish cured has been spontaneously presented to the Fishing Officers to be paid for and branded.

The total receipts derived from the fee have been £2644 12s. The estimate taken by the Commissioners of Inquiry of the cost of branding was £3380, so that it may be assumed that if the fishing had proved equal to that of last year the amount would have been realised.

It was intimated in the report for 1858 that forty-two of the most eminent foreign houses, situated at Stettin, Dantzig, Koenigsburg, Harburg, Magdeburg, had, from long experience of the brand, made declaration that they were resolved to carry on their dealings by it, although it should be charged with a fee; and the year's transactions not merely confirm that assurance, but prove in the most indubitable manner the

value set by the continent upon retaining it, and its intrinsic importance to the continuance and healthy action of the trade.

In the cod fisheries such change as has taken place has been one of increase, compared with the produce of the previous year. The relative quantities were:

	Cured dried.	Cured in pickle.	Exported dried.
	Cwts.	Barrels.	Cwts.
In 1858.....	95,595	4,584	32,152
1859.....	118,383	5,362½	35,923
Increase in 1859 ...	22,787	778½	3,771

It was stated in the report for 1858, that the meteorological department of the Board of Trade had, through the Board of Fisheries, issued barometers to certain fishing stations, and in 1859, some more were issued.

In the cod and ling department the returns show that in the year 1859, 118,383 cwt. were cured dried, and 5362½ barrels cured in pickle; and that the total quantity exported was 35,923 cwt. cured dried, being an increase over the preceding year of 22,787 cwt. cured dried, and 778½ barrels cured in pickle, and of 3,771 cwt. cured dried, in the total quantity exported.

From the statistical accounts it will be seen that in the year 1859, 12,802 boats, manned by 43,062 fishermen and boys, were employed in the herring, cod, and ling fisheries; and that the total estimated value of the boats, nets, and lines employed in these fisheries during the same period was £739,096, being an increase over the preceding year of 286 boats, and £13,540 in the estimated value of boats and nets, but at a decrease of ten in the number of fishermen employed.

I am at a loss to imagine why the collection of returns for the *English* fisheries were discontinued in 1850, whilst those of Scotland were regularly and periodically collected and published; for when I see the immense amount of attention and energy devoted to this most important question by the French government, I cannot but think that such a line of policy is most unwise, as the vast importance of the *English* fisheries demands as regular returns touching all the various descriptions of fish and methods of capturing them, as the mere herring, cod, ling fishery does; and this information can be procured *without any fresh outlay* by the government, if they will

only employ the coast guard and custom house officers to collect the information required. In many cases this would be a blessing, as it would give occupation to men who, in many instances, are at a loss for regular work. These returns should furnish an account of every kind and quantity of animal taken from the sea on our coast, from the whale to the shrimp, and would not in any way interfere with this branch of national industry, but would on the contrary tend to its increase as well as to furnish an immense amount of most useful and interesting information. It is a very suitable question for some independent member to bring before the legislature, and try to obtain for the public the information now withheld, possibly by favoritism, as it is continued for Scotland, &c.

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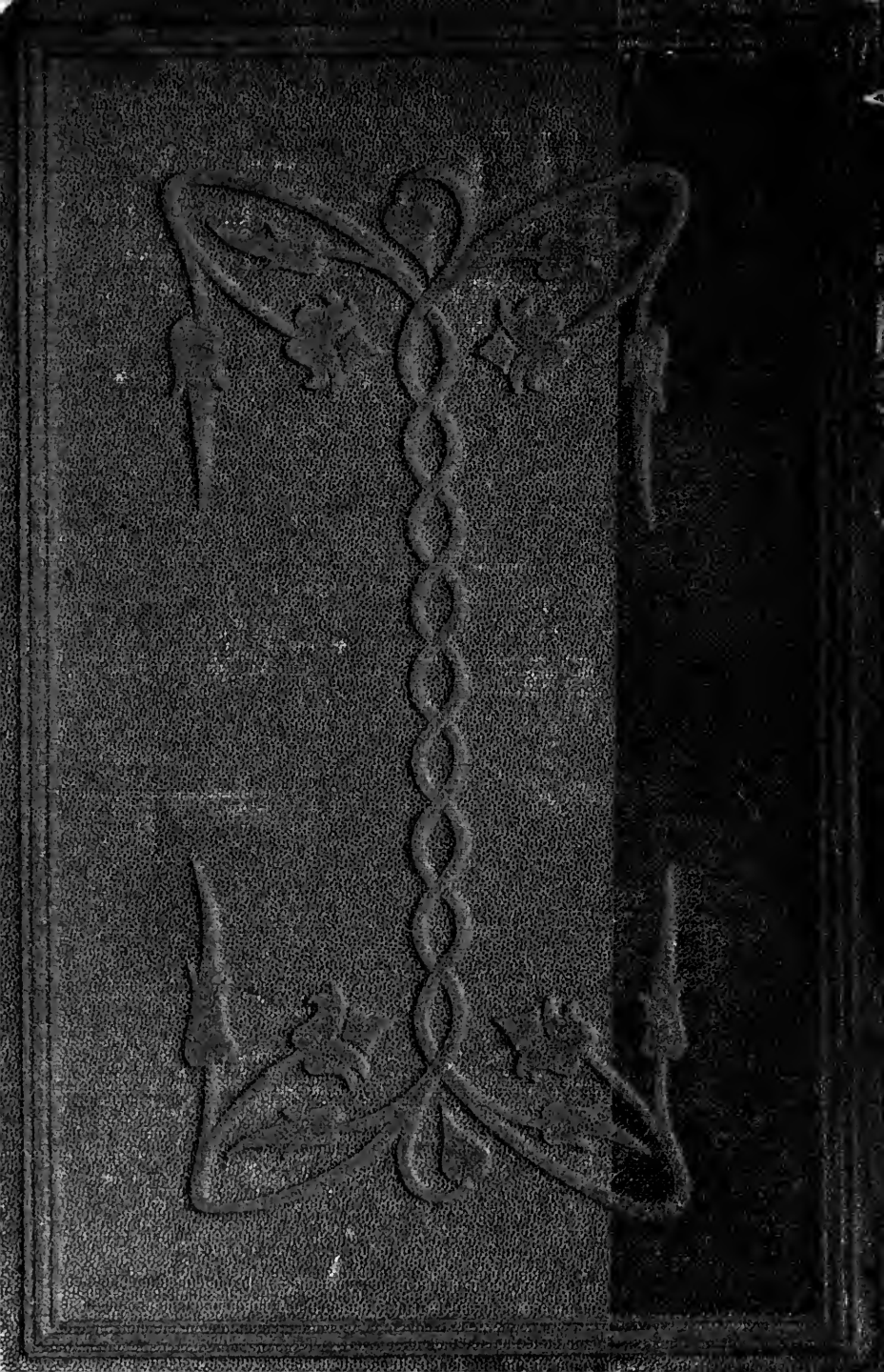
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